







THE ASSOCIATION OF  
BRITISH INSECTICIDE  
MANUFACTURERS

*Directory 1948*



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## FOREWORD

*From the President of the Board of Trade*

*From the President*



BOARD OF TRADE.  
MILLBANK.  
S. W. 1.

Shortage of food is one of the gravest problems now facing the world. We in Great Britain are trying to help in solving the problem by a greatly increased export of crop protection products and since the war the quantities we have been sending abroad have been more than twice as big as in pre-war days. The issue of this directory by the Association of British Insecticide Manufacturers, giving details of what we have to offer, should be particularly useful, therefore, at the present time.

British skill and experience have contributed much to the development of pest control. As we are by far the greatest food importing country, it is up to us to help our suppliers make their crops as large as possible. But all countries should benefit by an improvement in the world's food supplies, and by the increased volume of international trade accompanying it.

*Harold Wilson*

3rd February, 1948





*From the Minister of Agriculture*

**G.R.**

I welcome the issue by the Association of British Insecticide Manufacturers of this Directory of products and services which they can supply to overseas markets.

The industry has done its part in the protection of food crops in Great Britain, and at this critical time of shortage all over the world they can make a valuable contribution to the welfare of humanity by providing suitable products for the control of pests and diseases in countries overseas.

I have noted with satisfaction the efforts made by the industry to maintain their products at a high level of efficiency. Products with the same high standard of efficiency are sent overseas, and, in fact, where conditions permit they are identical with those sold in the British market.

*J. Williams*

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## THE ASSOCIATION OF BRITISH INSECTICIDE MANUFACTURERS

The following Committee was responsible for the scientific accuracy of the contents of the Directory:—

H. J. JONES, A.R.I.C. ( <i>Chairman</i> )	...	Hemingway & Co., Ltd.
J. R. BOOER, B.Sc., Ph.D.	... ..	F. W. Berk & Co., Ltd.
G. L. HEY, M.A. ... ..	...	Murphy Chemical Co., Ltd.
E. HOLMES, Ph.D., F.R.I.C.	... ..	Plant Protection, Ltd.
H. W. VALLENDER, B.Sc....	... ..	Association of British Insecticide Manufacturers.

The Association also acknowledges the assistance given in the preparation of certain of the technical introductions to the Products and Services Section by:—

A. H. DODD, M.A. ... ..	...	Newton Chambers & Co., Ltd.
W. LEYLAND COLE, M.Sc., F.R.I.C.	... ..	Shell Chemicals, Ltd.
W. R. ORRELL, B.Sc. ... ..	...	Plant Protection, Ltd.
W. V. PEET, Ph.D. ... ..	...	Geo. Monro, Ltd.

*The Association would be pleased to send, on request, copies to interested persons.*

166 PICCADILLY, LONDON, W.1.



## INTRODUCTION

**G**OOD husbandry must always take first place in the production of healthy crops, but the ever-increasing output necessitated by modern conditions demands something more. Intensive methods, the curtailment of rotations, and the increase of monoculture (as in plantation and forestry methods) produce conditions peculiarly favourable to the establishment of large pest populations, and the rapid spread of disease micro-organisms. Good husbandry, in these circumstances, must be supplemented by the use of chemicals; indeed, chemical methods of control are indispensable if serious epidemics are to be avoided.

If only from an economic point of view, the application of such chemicals must be made as simple as possible for the grower. Their cost, in fact, is often far less than the cost of applying them, and is generally quite insignificant in comparison with the good that they can do or, with the harm that may in some cases be done if they are improperly or unskilfully applied. In short, a good product, properly used, can result in the saving of an entire crop that would otherwise have been lost—and at a cost perhaps of only a fraction of 1 per cent. of the value of that crop. An unsuitable product or one improperly used may turn a partial crop failure into a total loss. These are risks which no grower can be expected to take. He is entitled to demand not only an approved product, but also information as to its use with safety and certainty on his particular crop and under his particular conditions. Thus it becomes the manufacturer's duty not merely to ensure uniform reliability by preparing the products under the supervision of skilled chemists, but also to include among his experts those having an intimate knowledge of all the biological problems that may arise in the control of pests and diseases in the field.

Such high standards of technical excellence are far easier to achieve by collaboration than by the isolated efforts of individual manufacturers, and this was foreseen by the founders of the Association of British Insecticide Manufacturers (A.B.I.M.). The Association was founded in 1928 as a specialised section of the Association of British Chemical Manufacturers. Its function was to concentrate exclusively on chemicals for use as insecticides and fungicides. It started with a membership of ten firms. But as the application of scientific methods to the control of crop pests and diseases grew, bringing demands for ever higher standards of manufacture, so did membership of the Association increase. To-day the membership, comprising thirty-three firms, covers some 90 per cent. of the industry.

It may be well to point out that the A.B.I.M. is not a trading concern. It has nothing to do with fixing prices, nor does it sponsor agreements between its members. It exists solely for the discussion of problems of mutual interest, and all that stands for improvement in insecticides and fungicides and progress in the control of pests and diseases through their use. Thus the Association commands for the benefit of users both the high technical skill of the British chemical manufacturer, and the services of the expert biochemists, botanists and entomologists on the staffs of its members.

For these reasons this Association is now recognised by the British Ministry of Agriculture as the voice of the industry.

#### **A.B.I.M. in War-time**

In 1939 the necessity for producing more food, and the consequent importance of protecting our crops from attacks of diseases and insect pests, was quickly recognised. The Association immediately placed its services at the disposal of the Ministry of Agriculture, and was able to assist in framing emergency legislation for the welfare of the grower community. As the war progressed, supplies of many raw materials used in the manufacture of our products were curtailed, and the Ministry of Supply was able to use the Association to ensure the equitable distribution of the limited quantities available. By the collaboration and goodwill of our members it was possible to restrict the use of such products to essential purposes. Thus the Association became the official agent of the Ministry of Supply in dealing with the allocation of raw materials. Incidentally, it may be recorded that the difficult task was effected without any disagreement among members.

The Association was also able to help other official bodies faced with war-time restriction. A notable example was the assistance given to the war-time Ministry of Production on specifications for packages.

#### **The Approval Scheme**

It has long been recognised by reputable manufacturers that the standardisation of insecticides and fungicides is in the interests both of the users and of the manufacturers. This is a subject with which the A.B.I.M. and its predecessor, the Chamber of Horticulture, have been closely associated for many years. The first step was taken in 1919, when, at the request of the growers, the Chamber of Horticulture prepared certain specifications which were adopted by the English Board of Agriculture (now the Ministry of Agriculture). In 1928 the National Farmers' Union asked for the revision of these specifications and for the introduction of legislation similar to that which governs the quality of fertilisers. The Association was consulted and it was agreed that voluntary conformity to accepted specifications was preferable to legislation. This culminated in the preparation by the A.B.I.M. of "Specifications and Methods of Analysis for certain Insecticides and Fungicides" which was published by the Ministry of Agriculture as Bulletin No. 82. Later, "Specifications and Methods of Analysis for Tar Oil Winter Washes" was prepared by a joint committee of representatives of the Association of British Insecticide Manufacturers and the Ministry, and published as Bulletin No. 122. This procedure proved so satisfactory that it has since been adopted for the preparation of specifications and methods of analysis for other materials.

With the increasing complexity of new insecticides and fungicides, however, further guidance was needed to meet the requirements either of growers or of the advisory officials. On the one hand the grower could not be expected to understand complex chemical names or appreciate fine distinctions and proportions of ingredients, and on the other hand the advisory officers could not officially recommend products, which they knew to be excellent, by their proprietary names.

To meet these difficulties the Ministry of Agriculture started the present approval scheme with the co-operation of the Association, and in this connection the status of the Association has been recognised in an arrangement by which the Association appoints four of its representatives to the Joint Panel, the body which fixes the standards for approval.

A Committee of independent scientists examines the biological performance of the product and, when satisfied as to its efficiency, recommends the product for official approval. The claims and recommendations appearing on the labels of products have also to be approved. Approved products bear an official mark of the Ministry and can be used in Great Britain with complete confidence.

Since approval is granted only in respect of conditions in Great Britain, the use of the approval mark is necessarily restricted to Great Britain. Whilst the mark does not therefore appear on exported insecticides and fungicides, in fact the products are identical and may be used with equally satisfactory results where climatic and other biological conditions are similar to those in Great Britain. In the case of modified products and those specially manufactured for use overseas, the same high standards are preserved.

It is recognised that the present scheme is but a step forward and the necessity for the progressive raising of standards is clearly foreseen. This Association is ready to give advice and assistance whenever such further progress becomes possible.

#### **The Export Group and U.N.R.R.A.**

To meet export requirements, the Pest Control Chemicals Export Group was formed by members of A.B.I.M., and this group was immediately available to organise supplies as European countries were liberated, and their requirements of pest control materials became known. In conjunction with U.N.R.R.A., the Association was thus able to render valuable services in the distribution of insecticides and fungicides. Many problems of great urgency were encountered, and notwithstanding the shortages of labour, packages, transport facilities, and, in some cases, raw materials, the Export Group was able to meet all the requirements of U.N.R.R.A. without delay.

#### **Research and Development**

As soon as it became possible to proceed with post-war planning, the Association appointed a Scientific Committee to draw up a programme of research and development to be undertaken as soon as possible. This Scientific Committee includes experts on all aspects of the control of pests and diseases. The resulting programme was accepted by the Ministry of Agriculture, and is regarded as the most complete statement yet prepared on the research necessary for the control of pests and diseases for the benefit of the grower. As it is thus mainly public interests that are served, discussions are proceeding with the Ministry of Agriculture as to how far public money can be used to put this programme into operation. The Association, however, convinced that the full programme recommended by its Scientific Committee is necessary, is prepared to use every endeavour to see this programme carried out by whatever means may prove most suitable.

The Association is frequently consulted on scientific problems and has been able to give valuable assistance in the formulation of specifications. One of its notable contributions to the



technique of pest control was the production of the new Fruit Bud Development Charts.\* These charts, prepared jointly by the Ministry of Agriculture and the Association, have made possible a major advance in the application of fruit tree sprays. They correlate spraying instructions with the state of development instead of with arbitrary and unreliable dates.

Although selective weed-killers are neither insecticides nor fungicides, it is of interest to record that this new aid in crop production has been largely developed by A.B.I.M. members.

#### **A.B.I.M. and the Overseas Grower**

The benefits of the A.B.I.M. are not restricted to the home market. They are to be found in every part of the world where crops are grown, ranging from work on such international problems as the control of locusts, termites and tropical root rot diseases, to such subjects as the fumigation of citrus crops in Spain, Palestine, Egypt, South Africa, Brazil and Australia. Work on banana leaf spot in Jamaica and on banding greases in Kenya has been done. These are but examples of the experience of members of the A.B.I.M. in the control by insecticides and fungicides of pests affecting crops throughout the world. The Association, with its scientific and practical advisers, is well equipped to undertake special investigations necessary to develop, in conjunction with local scientific workers, control measures against pests and diseases of crops whenever they occur.

Briefly the Association offers to the overseas grower:—

- (1) The high technical skill of the British chemical industry for the preparation of reliable insecticides, fungicides and related products.
- (2) The outstanding experience of its experts in the application of chemical products for the control of pests and diseases.
- (3) The resources and ability to tackle, in conjunction with local advisory officers, any problem which is of economic importance in the field of pest control.
- (4) Long experience in putting forward technical knowledge in terms which the practical grower can understand and apply in his own work.

\* Copies of *Fruit Bud Development Charts*, Bulletin No. 137 of the Ministry of Agriculture and Fisheries, may be obtained from H.M. Stationery Office, York House, Kingsway, London, W.C.2, price 2s. 2d. post free.

## INTRODUCTION A L'ANNUAIRE D'OUTREMER DE L'ASSOCIATION DES FABRICANTS BRITANNIQUES D'INSECTICIDES.

UNE bonne gestion agronomique est la condition première d'une récolte saine mais le rendement toujours croissant nécessité par les conditions actuelles exige davantage. Les méthodes intensives, la diminution des rotations et l'augmentation de la monoculture (comme dans les méthodes de plantation et de sylviculture) produisent des conditions particulièrement favorables à la multiplication des insectes nuisibles et des micro-organismes porteurs de parasites. Dans ces circonstances, une bonne agronomie doit être complétée par l'usage de produits chimiques; de fait, les méthodes chimiques de contrôle sont indispensables pour éviter les épidémies graves.

Du seul point de vue économique, l'application des produits chimiques doit être rendue aussi facile que possible pour le cultivateur. De fait, leur prix est souvent inférieur aux frais de leur application, et généralement tout à fait insignifiant en comparaison avec le bien qu'ils font—ou avec les dégâts qu'ils peuvent occasionner s'ils sont mal appliqués. Bref, un bon produit, bien employé, peut permettre de sauver toute une moisson qui sans lui serait perdue, avec des frais équivalant peut-être à 1% de la valeur de cette moisson. Un produit mal choisi ou mal appliqué peut transformer la perte partielle d'une moisson en perte totale. Ce sont là des risques qu'aucun cultivateur ne saurait encourir. Il a droit non seulement à un produit ayant fait ses preuves, mais aussi à des renseignements sur la façon de l'employer en toute sécurité pour ses propres moissons et dans ses propres conditions. Le devoir du fabricant est donc non seulement d'assurer que son produit maintient une qualité constante sous la surveillance de chimistes spécialisés, mais encore d'avoir dans son personnel des experts ayant une connaissance approfondie de tous les problèmes biologiques pouvant se poser pour la destruction des parasites et l'élimination des maladies des plantes.

Cette excellence technique exceptionnelle peut être atteinte beaucoup plus aisément en collaboration que par les efforts isolés de fabricants individuels, et ceci a été prévu par les fondateurs de l'Association des Fabricants Britanniques d'Insecticides, fondée en 1928 comme section spécialisée de l'Association de Fabricants Britanniques de Produits Chimiques. Sa fonction a été de se consacrer exclusivement aux produits chimiques employés comme insecticides et fongicides. Au début, elle comptait dix maisons entre ses membres, mais, avec la croissance de l'application des méthodes scientifiques pour combattre les parasites des plantes et les maladies agricoles et la demande qu'elle inspira d'une qualité toujours supérieure, le nombre des membres de l'Association augmenta à son tour. Aujourd'hui, les trente trois maisons affiliées constituent les 90% de toutes les grandes maisons britanniques fabriquant des insecticides et des fongicides.

Il convient de souligner que l'A.B.I.M. n'est pas une entreprise commerciale. Elle n'a rien à voir avec la fixation des prix, et elle ne se porte pas garante des accords conclus entre

ses membres. Elle existe uniquement pour la discussion de problèmes d'intérêt mutuel et de tout ce qui peut améliorer les insecticides et fongicides et favoriser l'élimination des parasites et des épidémies agricoles par leur emploi. L'Association dispose par conséquent à la fois de la haute compétence des fabricants britanniques de l'industrie chimique et des services des biochimistes, botanistes et entomologistes employés par ses membres.

Pour ces raisons, l'Association est considérée actuellement comme le porte-parole de son industrie par le Ministère britannique de l'Agriculture.

#### **L'A.B.I.M. en Temps de Guerre**

*En 1939, on reconnut rapidement la nécessité de produire davantage de denrées alimentaires et par conséquent de protéger nos moissons des épidémies et des parasites. L'Association plaça immédiatement ses services à la disposition du Ministère de l'Agriculture, et fut à même d'aider à formuler des dispositions législatives pour la protection de l'agriculture. Durant la guerre, la fourniture de nombreuses matières premières employées dans la fabrication de nos produits fut restreinte, et le Ministère des Approvisionnements employa notre Association pour assurer la distribution équitable des quantités limitées disponibles. Grâce à la collaboration bénévole de nos membres, il a été possible de restreindre l'usage de ces produits à des usages essentiels. L'Association devint ainsi l'agent officiel du Ministère des Approvisionnements pour les allocations des matières premières. En passant, il est à constater que cette tâche difficile fût menée à bien sans aucun désaccord parmi nos membres.*

L'Association a également aidé d'autres organismes officiels chargés des restrictions du temps de guerre, notamment le Ministère de la Production pour la spécification des emballages.

#### **Le Système d'Homologation**

Il a été reconnu depuis longtemps par les bons fabricants que la normalisation des insecticides et fongicides était de l'intérêt tant des consommateurs que des fabricants eux-mêmes. C'est là un sujet que l'A.B.I.M. et la Chambre de l'Horticulture qui la précéda ont étudié de près depuis bien des années. La première mesure fut prise en 1919; à la requête des agriculteurs la Chambre de l'Horticulture formula certaines spécifications qui furent adoptées par le Conseil de l'Agriculture en Angleterre (aujourd'hui le Ministère de l'Agriculture). En 1928, l'Union Nationale des Agriculteurs demanda la révision de ces spécifications et l'introduction de lois similaires à celles réglant la qualité des engrais. On consulta l'Association, et il fut convenu que la conformité volontaire à des spécifications agréées était préférable à la législation. Le résultat fut l'élaboration par l'A.B.I.M. de "Spécifications et Méthodes d'analyse pour certains insecticides et fongicides," publiées par le Ministère de l'Agriculture dans son Bulletin No. 82. Plus tard, celui-ci publia dans son Bulletin No. 122 des "Spécifications et Méthodes d'analyse pour les lessives d'hiver à l'huile de goudron," formulées conjointement par une commission mixte de représentants de l'Association des Fabricants Britanniques d'Insecticides et du Ministère. Ce procédé donna une telle satisfaction qu'il fut employé plus tard pour l'élaboration de spécifications et méthodes d'analyse pour d'autres substances.

Toutefois, avec la complexité croissante des nouveaux insecticides et fongicides, on avait besoin de renseignements plus précis pour satisfaire les exigences des agriculteurs et aussi des

experts officiels. D'une part, il était impossible de demander à l'agriculteur d'apprendre les noms chimiques compliqués ou d'apprécier les distinctions subtiles dans les proportions des ingrédients, et, d'autre part, les experts officiels ne pouvaient pas recommander des produits, dont ils connaissaient la qualité excellente, par leur marque de fabrique.

Pour parer à ces difficultés, le Ministère de l'Agriculture créa, avec la collaboration de l'Association, le système d'homologation; le statut de l'Association fut reconnu dans un accord aux termes duquel l'Association nomme quatre représentants à une Commission Mixte qui fixe les normes d'homologation.

Un comité de savants indépendants examine les effets biologiques des produits, et, dans le cas où il est convaincu de leur efficacité, recommande que l'homologation soit prononcée. Les termes des prétentions et des instructions apparaissant sur l'étiquette du produit doivent aussi être approuvés. Les produits homologués portent une marque officielle du Ministère et peuvent être utilisés en toute confiance en Grande-Bretagne.

Etant donné que l'homologation n'est prononcée qu'en ce qui concerne les conditions régnant en Grande-Bretagne, l'emploi de la marque d'homologation est nécessairement restreint à la Grande-Bretagne. La marque n'est donc pas apposée sur les insecticides et fongicides destinés à l'exportation, mais les produits sont tout de même identiques et peuvent être utilisés avec des effets satisfaisants dans les pays dont les conditions climatiques et autres conditions biologiques sont similaires à celles régnant en Grande-Bretagne. Dans le cas de produits modifiés et de ceux spécialement fabriqués pour l'emploi outremer, le même degré d'excellence est maintenu.

On reconnaît que le système actuel n'est qu'un premier pas en avant vers une amélioration toujours plus marquée des normes, dont la nécessité est clairement reconnue. L'Association donne volontiers ses conseils et son assistance partout là où de nouveaux progrès deviennent possibles.

#### **Le Groupe d'Exportation et U.N.R.R.A.**

Le groupe d'exportation des produits chimiques anti-parasitaires a été formé par des membres de l'A.B.I.M. pour faire face aux demandes du commerce d'exportation. Il a organisé des livraisons aux pays européens dès leur libération et dès que leurs besoins ont été connus. D'accord avec U.N.R.R.A., l'Association a rendu de précieux services dans la distribution des insecticides et des fongicides. Malgré les nombreuses et graves difficultés, la pénurie de main d'œuvre, d'emballage, de transport et, dans certains cas, de matières premières, le groupe d'exportation a pu satisfaire à toutes les exigences d'U.N.R.R.A. sans délai.

#### **Recherches et Etudes**

Dès qu'il a été possible de formuler des projets pour l'après-guerre, l'Association a nommé un comité scientifique pour élaborer un programme d'études et de recherches à effectuer aussitôt que possible. Ce comité comprend des experts dans tous les domaines de la lutte contre les parasites et les épidémies. Le programme élaboré a été accepté par le Ministère de l'Agriculture et est considéré comme le plus complet qui ait été formulé jusqu'à présent quant aux recherches à faire pour la lutte contre les parasites et les épidémies. Comme il s'agit là de travaux d'intérêt public, on procède actuellement à des négociations avec le Ministère de l'Agriculture pour déterminer la proportion de fonds publics pouvant être affectée pour mener à bien ce programme.

L'Association, convaincue qu'elle est que le programme entier recommandé par le comité scientifique est indispensable, est prête à employer tous ses efforts pour exécuter ce programme par les moyens mieux appropriés quels qu'ils soient.

L'Association est fréquemment consultée sur les sciences appliquées aux problèmes agricoles, et elle a fréquemment contribué une aide précieuse à l'élaboration de spécifications. Une de ses contributions les plus notables à la technique de la lutte contre les parasites a été l'élaboration des nouvelles tables de développement des boutons de fruits.\* Ces tables, élaborées conjointement avec le Ministère de l'Agriculture, ont permis une avance considérable dans la technique de la vaporisation des arbres fruitiers. Elles mettent les modes d'emploi sur la vaporisation en corrélation avec l'état du développement, au lieu de dates arbitraires et incertaines.

Bien que les produits destinés à détruire les mauvaises herbes ne soient ni des insecticides ni des fongicides, il est intéressant de noter que cette nouvelle aide apportée à l'agriculture a été en grande partie l'œuvre de membres de l'A.B.I.M.

### **L'A.B.I.M. et les Agriculteurs Étrangers**

Les bienfaits de l'A.B.I.M. ne sont pas restreints au seul marché intérieur. On les retrouve dans toutes les parties du monde où l'on s'adonne à l'agriculture, et ils vont de la collaboration aux problèmes internationaux tels que la lutte contre les sauterelles, les termites, et les maladies des racines tropicales jusqu'à des sujets tels que la fumigation des citronniers en Espagne, Palestine, Egypte, Afrique du Sud, Brésil et Australie. On a également travaillé à la lutte contre le tachetage des bananes à la Jamaïque et les bandes graisseuses au Kenya. Ce ne sont là que quelques exemples des expériences des membres de l'A.B.I.M. dans la lutte contre tout ce qui peut affecter les moissons dans le monde entier. L'Association, grâce à ses experts scientifiques et pratiques, est à même d'entreprendre les recherches spéciales nécessaires pour déterminer, d'accord avec les experts scientifiques locaux, les mesures de contrôle contre les parasites et les épidémies des moissons partout où c'est nécessaire.

En bref, l'Association offre aux agriculteurs d'outremer:—

- (1) La haute compétence technique de l'industrie chimique britannique dans la fabrication d'insecticides, fongicides et autres produits similaires d'effet sûr.
- (2) L'expérience remarquable de ses experts dans l'application des produits chimiques à la lutte des parasites et épidémies.
- (3) Les ressources et la compétence nécessaires pour résoudre, d'accord avec les autorités locales compétentes, tous les problèmes d'importance vitale dans la lutte contre les parasites.
- (4) Sa longue expérience dans l'exposition de connaissances techniques en termes que l'agriculteur moyen puisse comprendre et appliquer dans son travail.

\* Des copies de ces tables de développement des boutons de fruits peuvent être obtenues à la H.M. Stationery Office, York House, Kingsway, London, W.C.2 (Bulletin No. 137 of the Ministry of Agriculture and Fisheries, prix 2s. 2d. port payé).

## INTRODUCCIÓN A LA GUÍA COMERCIAL PARA ULTRAMAR DE LA ASOCIACIÓN DE FABRICANTES BRITÁNICOS DE INSECTICIDAS

**L**O principal para obtener cosechas sanas es una buena labranza. Pero la producción siempre creciente que imponen las modernas circunstancias exige algo más. Los métodos intensivos, la abreviación de las rotaciones y el incremento de la monocultura (como en los métodos forestales y de las plantaciones), producen condiciones peculiarmente favorables al establecimiento de grandes focos de plagas y a la rápida propagación de enfermedades producidas por microorganismos. La buena labranza, en estas circunstancias, tiene que ser reforzada con el empleo de productos químicos—realmente, los métodos químicos de control son indispensables si han de evitarse serias epidemias.

Aunque no sea más que por razones económicas, la aplicación de tales productos químicos debe hacerse lo más simple posible para el agricultor. Su costo, en realidad, es a menudo mucho menor que el de su aplicación, y generalmente es absolutamente insignificante en comparación con los beneficios que pueden reportar o con los perjuicios que algunas veces pueden causar si han sido aplicados impropia o torpemente. En resumen, un buen producto, correctamente usado, puede tener el resultado de salvar toda una cosecha que de otro modo se habría perdido —y a un costo quizás de solamente una fracción del 1% del valor de esta cosecha. Un producto impropio o uno usado inadecuadamente puede convertir la pérdida parcial de una cosecha en una pérdida total. Ningun agricultor deberá correr estos riesgos. Este tiene el derecho de exigir no sólo un producto aprobado, sino también información sobre la manera de emplearlo con seguridad y certidumbre para su particular cultivo y en sus particulares circunstancias. Por ello el fabricante tiene la obligación no sólo de asegurar una confianza uniforme elaborando los productos bajo la inspección de químicos capacitados, sino también de incluir entre sus expertos a los que posean un conocimiento íntimo de todos los problemas biológicos que puedan surgir en la lucha contra plagas y enfermedades del campo de acción.

Este alto nivel de excelencia técnica es más fácil de lograr con la colaboración que por los esfuerzos aislados de los fabricantes individuales, y esto lo previeron los fundadores de la Asociación de Fabricantes Británicos de Insecticidas. La Asociación fué fundada en 1928 como una sección especializada de la Asociación de Fabricantes Británicos de Productos Químicos. Su objeto era el de concentrarse exclusivamente en productos químicos para usarlos como insecticidas y fungicidas. Diez fueron al principio las firmas asociadas, pero según avanzaba la aplicación de métodos científicos para combatir las plagas y enfermedades de los cultivos, elevando continuamente el nivel de los productos fabricados, así crecía el número de componentes de la Asociación. En la actualidad, el número de asociados suman 33, lo que representa el 90% de los fabricantes británicos de insecticidas y fungicidas.

Conviene hacer constar que la A.B.I.M. no es una empresa comercial. No interviene para nada en la fijación de precios, ni en la promoción de convenios entre sus asociados. Existe

solamente para ventilar los de problemas de interés mutuo, y todo aquello que tienda al mejoramiento de los insecticidas y fungicidas y progreso en el control de plagas y enfermedades mediante su empleo. La Asociación dispone así, en beneficio de los consumidores, tanto de la elevada pericia técnica del fabricante británico de productos químicos, como de los servicios de los bioquímicos, botánicos y entomólogos expertos que forman parte del personal de sus asociados.

Por estas razones, esta Asociación es ahora reconocida por el Ministerio Británico de Agricultura como la voz de la industria.

#### **La A.B.I.M. en Tiempo de Guerra**

En 1939 la necesidad de producir más alimentos, y la consiguiente importancia de proteger a nuestros cultivos contra los ataques de las enfermedades y plagas de insectos, fué inmediatamente reconocida. La Asociación puso en el acto sus servicios a disposición del Ministerio de Agricultura y pudo ayudar en la preparación de legislación de emergencia en bien de la comunidad agrícola. A medida que avanzaba la guerra, se iban restringiendo los suministros de muchas materias primas empleadas en la elaboración de nuestros productos, y el Ministerio de Suministros pudo hacer uso de la Asociación para asegurar la distribución equitativa de las limitadas cantidades disponibles. Debido a la colaboración y buena voluntad de nuestros asociados, fué posible restringir el uso de tales productos a fines esenciales. De este modo la Asociación vino a ser el agente oficial del Ministerio de Suministros en lo concerniente a la distribución de materias primas. Incidentalmente, cabe mencionar que esta difícil tarea se realizó sin ninguna desavenencia entre los miembros.

La Asociación pudo también ayudar a otros organismos oficiales afectados por las restricciones de tiempo de guerra. Un ejemplo notable fué la ayuda prestada al Ministerio de Producción de tiempo de guerra con relación a especificaciones para envases.

#### **El Sistema de Aprobación**

Desde hace mucho se ha reconocido por fabricantes acreditados que la estandarización de los insecticidas y fungicidas redundaba en beneficio tanto de los consumidores como de los fabricantes mismos. Este es un asunto que desde hace años ha sido objeto de especial atención por parte de la A.B.I.M. y de su predecesora, la Cámara de Horticultura. El primer paso se dió en 1919, cuando a requerimiento de los cultivadores, la Cámara de Horticultura preparó ciertas especificaciones que fueron adoptadas por el Consejo de Agricultura de Inglaterra (hoy Ministerio de Agricultura). En 1928 la Unión Nacional de Agricultores solicitó la revisión de estas especificaciones y la introducción de medidas legislativas análogas a las vigentes para la calidad de los fertilizantes. Se consultó a la Asociación, y se convino en que la conformidad voluntaria a especificaciones convenidas era preferible a la legislación. Esto culminó en la preparación por la A.B.I.M. de—"Especificaciones y Métodos de Análisis para ciertos Insecticidas y Fungicidas"—publicados por el Ministerio de Agricultura en su Boletín No. 82.

Más tarde, en su Boletín No. 122 el Ministerio publicó "Especificaciones y Métodos de Análisis para Pulverizaciones Invernales de Aceite de Alquitrán," informe preparado por una comisión mixta de representantes de la Asociación de Fabricantes Británicos de Insecticidas y del Ministerio. Este procedimiento resultó tan satisfactorio que desde entonces ha sido adoptado para la elaboración de especificaciones y métodos de análisis para otros productos.

Sin embargo debido a la creciente complejidad de los nuevos insecticidas y fungicidas se consideraron necesarias nuevas orientaciones para satisfacer los requerimientos tanto del cultivador como de los funcionarios asesores. Por un lado no se podía esperar que el cultivador aprendiera nombres químicos complejos o apreciara las sutiles distinciones y proporciones de ingredientes, y por otro lado los funcionarios asesores no podían oficialmente recomendar productos, aunque sabían que eran excelentes, por su marca de fábrica.

Para resolver estas dificultades, el Ministerio inauguró, con la cooperación de la Asociación el actual sistema de aprobación reconociendo personalidad legal a ésta última, en un acuerdo por el cual la Asociación nombra a cuatro de sus representantes para integrar la comisión mixta, que es el organismo que fija las normas de aprobación.

Un comité de científicos independientes examina la acción biológica respecto de un producto y caso de convencerse de su eficacia, recomienda la aprobación del producto. Las pretensiones y recomendaciones que figuren en las etiquetas de los productos han de ser también aprobadas. Los productos aprobados llevan la marca oficial del Ministerio y pueden emplearse en la Gran Bretaña con toda confianza.

Como la aprobación se concede solamente de acuerdo con las condiciones en la Gran Bretaña, el empleo de la marca de aprobación está necesariamente limitado a la Gran Bretaña. Sin embargo, aunque, por esta razón, no aparece en los insecticidas y fungicidas exportados, en realidad los productos son idénticos y pueden emplearse con los mismos resultados satisfactorios cuando las condiciones climatológicas y biológicas sean similares a las de la Gran Bretaña. En los casos de productos modificados y de los manufacturados especialmente para usar en países de ultramar, se mantienen las mismas cualidades.

Se reconoce que el actual sistema sólo es un primer paso y claramente se prevé la necesidad de la elevación progresiva de las normas. Esta Asociación está dispuesta a aconsejar y ayudar cuandoquiera que exista la posibilidad de tal avance.

#### **El Grupo de Exportación y U.N.R.R.A.**

Para satisfacer los requerimientos de la exportación, miembros de la A.B.I.M. crearon el Grupo de Exportación de Productos Químicos para el Control de Plagas, que inmediatamente se ofreció para organizar suministros a los países europeos a medida que eran liberados y se daban a conocer sus necesidades de materiales para el control de las plagas. En colaboración con la U.N.R.R.A., la Asociación ha podido así prestar valiosos servicios en la distribución de insecticidas y fungicidas. Se presentaron numerosos problemas de mucha urgencia, y a pesar de la escasez de brazos, envases, facilidades de transporte y, en algunos casos, de materias primas, el Grupo de Exportación pudo satisfacer todas las demandas de la U.N.R.R.A. sin demora.

#### **Investigación y Desarrollo**

En cuanto fué posible planear la postguerra, la Asociación nombró un Comité Científico para elaborar un programa de investigación y desarrollo lo antes posible. Este Comité Científico está compuesto por técnicos de todas clases relacionados con el control de plagas y enfermedades. El programa resultante fué aceptado por el Ministerio de Agricultura y es considerado como la exposición más completa que hasta ahora se haya preparado sobre la investigación científica necesaria para combatir las plagas y enfermedades en beneficio del agricultor. Por



consiguiente, como son los intereses públicos los que van a resultar principalmente beneficiados, se está ahora examinando con el Ministerio de Agricultura hasta qué punto se pueden emplear fondos públicos para realizar este programa. La Asociación, sin embargo, convencida de que es necesario el programa íntegro sugerido por su Comité Científico, está dispuesta a hacer toda clase de esfuerzos para llevar a la práctica este programa por cualesquiera medios que resulten más convenientes.

La Asociación es consultada frecuentemente sobre problemas científicos y ha podido prestar valiosa ayuda en la formulación de especificaciones. Una de sus más notables contribuciones a la técnica del control de plagas es la producción de las nuevas Tablas sobre el desenvolvimiento de los brotes de los frutales.\* Estas tablas, preparadas conjuntamente por el Ministerio de Agricultura y la Asociación, han hecho posible un avance importante en la aplicación de pulverizaciones a los árboles frutales. Ellas ponen en correlación las instrucciones para las pulverizaciones con el estado de desarrollo, en lugar de depender de fechas arbitrarias y en las que se puede confiar.

Aunque los matahierbas selectivos no son insecticidas ni fungicidas, es de interés observar que esta nueva ayuda en la producción de cosechas ha sido desarrollada principalmente por miembros de la A.B.I.M.

#### **A.B.I.M. y el Agricultor de Ultramar**

Los beneficios de la A.B.I.M. no están limitados al mercado interior. Se extienden a todas las partes del mundo donde se cultivan cosechas, variando desde en problemas internacionales como la lucha contra la langosta, termitas y enfermedades tropicales como la podredumbre de las raíces, hasta asuntos como la fumigación de los agrios en España, Palestina, Egipto, Sud Africa, Brasil y Australia. En Jamaica se ha trabajado para combatir la mancha de la hoja del banano, y en Kenya con aplicaciones de grasas a los troncos de los árboles. Estos no son mas que unos cuantos ejemplos de la experiencia de los miembros de la A.B.I.M. en el control por medio de insecticidas y fungicidas de las plagas que afectan a los cultivos en todas partes del mundo. La Asociación, con sus asesores científicos y prácticos, está bien equipada para encargarse de investigaciones especiales necesarias para desarrollar, en colaboración con trabajadores científicos locales, medidas de control contra las plagas y enfermedades de los cultivos dondequiera que ocurran.

Resumiendo, la Asociación ofrece al cultivador de ultramar:—

- (1) La alta pericia técnica de la Industria Química Británica para la preparación de insecticidas, fungicidas y productos afines de toda confianza.
- (2) La incomparable experiencia de sus expertos y los de sus firmas asociadas en la aplicación de productos químicos para combatir las plagas y enfermedades del campo.
- (3) Los recursos y preparación técnica para resolver, en conjunción con los funcionarios asesores locales, cualquier problema de importancia económica en la esfera del control de plagas.
- (4) Una larga experiencia para exponer cuestiones técnicas en términos que el cultivador práctico puede comprender y aplicar en sus labores.

\* *Tablas sobre el desenvolvimiento de los brotes de los frutales, Bulletin No. 137 del Ministry of Agriculture and Fisheries, publicado por la H.M. Stationery Office, York House, Kingsway, London, W.C.2, precio 2s. 2d.*

## PREFÁCIO PARA O ANUÁRIO DE ALÉM-MAR da ASSOCIAÇÃO BRITANICA DE FABRICANTES DE INSECTICIDAS

A ADOPÇÃO de processos racionais de cultura constitui, sem dúvida, o primeiro factor a considerar quando se pretende obter colheitas remuneradoras. Mas, acontece que a cultura intensiva (exigida pela necessidade sempre crescente de tornar maior o rendimento da terra) a diminuição da prática das rotações e o consequente aumento da monocultura, criam condições particularmente favoráveis ao estabelecimento de numerosas pragas e à rápida propagação de doenças microbianas. Nestas condições, os agricultores têm cada vez maior necessidade de incluir nos granjeios a aplicação de produtos químicos capazes de destruir as pragas e combater as doenças.

Há necessidade de facultar aos lavradores todos os elementos que garantam o êxito no combate aos inimigos das suas culturas. Com efeito, não basta pôr à sua disposição produtos químicos de esmerado fabrico e ótima qualidade. Se estes produtos não forem aplicados proficientemente, os resultados não podem ser satisfatórios. Acontece mesmo por vezes que o emprego de um produto inadequado e a sua aplicação pouco cuidadosa acarretam prejuizos mais consideráveis do que os que resultariam de se deixar as pragas à vontade, sem lhes dar combate. Ora, não é admissível que os agricultores estejam sujeitos a estes riscos. O fabricante tem obrigação, não só de fornecer produtos preparados sob a direcção e fiscalização de peritos químicos, como também de indicar o modo de aplicar esses produtos com segurança e com garantia de êxito de harmonia com os resultados dos estudos de cientistas conhecedores dos problemas biológicos relacionados com as pragas e doenças das plantas.

Como é difícil para os fabricantes isolados, atingir o nível de investigação científica necessário, nos domínios da biologia e da química surgiu a ideia de se organizar uma associação dos mesmos fabricantes para tomar a seu cargo os estudos em que se basearia a assistência técnica a prestar aos agricultores, no respeitante ao combate às pragas e às doenças das culturas.

A ideia foi posta em prática e em 1928 foi fundada a Associação Britânica de Fabricantes de Insecticidas (Association of British Insecticide Manufacturers—A.B.I.M.) que constitui uma secção especializada da Associação Britânica dos Fabricantes de Produtos Químicos, e se dedica exclusivamente ao estudo dos assuntos respeitantes a estes produtos quando se destinam a ser utilizados como insecticidas ou fungicidas.

A Associação Britânica de Insecticidas (A.B.I.M.) que principiou a funcionar apenas com dez membros, engloba actualmente 30 empresas, incluindo 90% dos fabricantes ingleses de insecticidas e fungicidas.

Convém talvez frizar que a A.B.I.M. não é uma empresa comercial. Nada tem que ver com a fixação de preços nem com o estabelecimento de acordos entre os seus membros.

Existe unicamente para discussão de problemas de interesse mútuo e de tudo o que se refere ao aperfeiçoamento de insecticidas e fungicidas e aos progressos nos métodos de combate às pragas e doenças. Desta maneira, a Associação dispõe, em benefício dos que utilizam esses produtos dos melhores peritos químicos da "British Chemical Manufacturer" e de todos os

consultores técnicos especializados em bioquímica, botânica e entomologia pertencentes aos seus associados.

Pelos motivos expostos, esta Associação é actualmente considerada pelo Ministério da Agricultura como o porta-voz da indústria da especialidade.

#### **A A.B.I.M. durante a guerra**

Em 1938 rapidamente se verificou a necessidade de produzir mais alimentos e a consequente importância de defender as culturas dos ataques das doenças e das pragas de insectos. A Associação pôs desde logo os seus serviços à disposição do Ministério da Agricultura e ajudou a elaborar uma legislação de emergência a bem da comunidade dos lavradores. À medida que a guerra progredia, foram escasseando as provisões de muitas matérias primas empregadas no fabrico dos nossos produtos, e o Ministério dos Abastecimentos recorreu à Associação encarregando —a de distribuir equitativamente as limitadas quantidades disponíveis. Graças à colaboração e à boa vontade dos nossos associados conseguiu—se restringir o emprego desses produtos unicamente aos fins essenciais. A Associação tornou-se assim o agente do Ministério dos Abastecimentos relativamente ao rateio das matérias primas. Não deixa de ser digno de registo o facto de não ter surgido qualquer desentendimento entre os associados durante o desempenho desta árdua tarefa.

A Associação auxiliou ainda outros organismos oficiais obrigados a enfrentar restrições relativas à guerra. O auxílio prestado ao então Ministério da Produção, referentemente à especificação de embalagens, constitui um exemplo notável.

#### **Organização do Serviço de Aprovações**

Há muito que os mais acreditados fabricantes reconheceram as vantagens da “estandardização” dos insecticidas e fungicidas, tanto no interesse dos consumidores como dos fabricantes. A A.B.I.M. e a sua predecessora—a Camara de Horticultura—mantiveram, de há muitos anos, estreitos contactos com este assunto. Deu-se o primeiro passo neste sentido em 1919, quando, a pedido de lavradores, a Câmara de Horticultura elaborou determinadas especificações que foram adoptadas pelo “English Board of Agriculture” (actualmente Ministério da Agricultura). Em 1928 a National Farmer’s Union (União Nacional dos Lavradores) requereu a revisão destas especificações e a elaboração de uma legislação semelhante à que regulamenta a qualidade dos adubos. Consultou-se a Associação e chegou-se ao acordo de que a aceitação voluntária das especificações expostas era preferível à sua imposição por via legal. Daqui resultou a elaboração pela A.B.I.M., do trabalho “Especificação e métodos de análise de determinados insecticidas e fungicidas” publicado pelo Ministério de Agricultura no seu Boletim no. 82. Mais tarde, com a colaboração de uma comissão de representantes da “A.B.I.M.” e do Ministério de Agricultura, elaborou-se o trabalho “Especificações e Métodos de análise de caldas de inverno à base de alcatrão” que foi publicado no Boletim no. 122.

Este sistema revelou-se tão satisfatório que passou a ser adoptado para a elaboração de especificações e métodos de análise de outros produtos.

Com a crescente complexidade dos novos insecticidas e fungicidas, tornou-se necessária uma maior assistência tanto para atender as pretensões dos lavradores como para facilitar o trabalho dos consultores técnicos oficiais. Por um lado não se podia exigir que o lavrador fixasse as

designações de produtos químicos complexos ou avaliasse ligeiras diferenciações ou proporções de ingredientes; por outro lado os consultores técnicos oficiais não podiam recomendar oficialmente produtos que eles presumiam ser excelentes devido ao crédito que lhes mereciam os seus fabricantes.

Para obviar estas dificuldades, o Ministério da Agricultura iniciou o actual serviço de aprovações, com o auxílio da Associação, e neste aspecto a posição deste Organismo foi definida num acordo pelo qual ele nomeia quatro dos seus representantes para o juri do Conselho de Aprovação que é a entidade que determina as especificações a aprovar.

Uma Comissão de cientistas independentes examina o comportamento biológico do produto e quando a sua eficácia resulta satisfatória, recomenda que esse produto seja submetido à aprovação oficial. As possibilidades atribuídas ao produto, bem como as instruções que figuram nos rótulos, são também submetidas a aprovação. Os produtos aprovados têm uma marca oficial do Ministério e podem ser usados com toda a confiança. Visto a aprovação ser dada unicamente em relação às condições existentes na Grã Bretanha, a aposição da marca oficial, como é obvio, restringe-se aos produtos a empregar no país. Embora por este facto, a marca oficial não apareça nos insecticidas e fungicidas exportados, a verdade é que os produtos são iguais e podem ser empregados com resultados igualmente satisfatórios nas regiões em que as condições biológicas correspondem às da Grã Bretanha. No caso de se fazerem modificações nos produtos com fins de adaptação, ou de estes se fabricarem especialmente para serem empregados noutros continentes, mantem-se o mesmo nível de boa qualidade.

Reconhece-se que o actual serviço de aprovação constitui apenas um passo à frente e que se impõe a necessidade de fomentar o aperfeiçoamento progressivo dos "standards."

Esta Associação está pronta a dar o seu parecer e a sua assistência sempre que seja possível qualquer movimento no sentido de aperfeiçoamento.

#### **O Grémio de Exportação e a U.N.R.R.A.**

Para satisfazer as necessidades de exportação, formou-se o Grémio de Exportação de Produtos Químicos para Combate às Pragas, constituído por membros da A.B.I.M. Este Grémio pôde imediatamente organizar o serviço dos fornecimentos à medida que os países da Europa iam sendo libertados e que se manifestava a sua necessidade de produtos para combate às pragas. De colaboração com a U.N.R.R.A., a Associação pôde assim prestar valiosos serviços na distribuição de insecticidas e fungicidas. Surgiram vários problemas de grande urgência mas, apesar da escassez de mão de obra, de embalagens, de transportes e, e em alguns casos, de matérias primas, o Grémio de Exportação conseguiu satisfazer sem demora todos os pedidos da U.N.R.R.A.

#### **Investigação e aperfeiçoamento**

Assim que puderam iniciar-se trabalhos do após-guerra, a Associação nomeou uma Comissão de cientistas para elaborar um programa de investigações e aperfeiçoamentos para ser cumprido logo que fosse possível.

Esta Comissão é constituída por peritos de todas as modalidades do combate às pragas e doenças. O programa traçado foi aprovado pelo Ministério da Agricultura e é considerado o mais completo, até hoje realizado, acerca das investigações requeridas para o combate às pragas

e doenças, no interesse do agricultor. Como este programa serve principalmente os interesses públicos, está-se tratando com o Ministério da Agricultura, a fim de se estabelecer a verba do orçamento do Estado para o pôr em execução.

Contudo, a Associação convencida da necessidade de levar a cabo todo o programa traçado pela sua Comissão de cientistas, está disposta a envidar todos os esforços no sentido da sua efectivação, recorrendo aos meios que se revelarem mais convenientes.

A Associação é consultada frequentemente acerca de problemas científicos e tem facultado uma assistência valiosa quanto à formulação de especificações.

Uma das suas notáveis contribuições para a técnica do combate às pragas foi a elaboração das "Fruit Bud Development Charts"\* (acerca das fases de evolução dos gomos frutíferos). Este trabalho preparado com a colaboração do Ministério da Agricultura e da Associação, tornou possível um notável progresso na aplicação de caldas às árvores de fruto. Nele se estabelece a relação entre o emprego das pulverizações e as fases de desenvolvimento dos gomos, em vez de se fixarem datas arbitrárias e incertas que poderiam comprometer a eficácia do tratamento.

Embora os herbicidas específicos não sejam insecticidas nem fungicidas, interessa registar que esta nova modalidade de protecção às culturas foi em grande parte desenvolvida por membros da A.B.I.M.

#### **A A.B.I.M. e os agricultores de alem-mar**

Os benefícios devidos à A.B.I.M. não se restringem ao mercado nacional. Verificam-se em todas as partes do mundo em que se fazem culturas e não só compreendem problemas internacionais (combate aos gafanhotos, termitas e doenças criptogâmicas tropicais) como se estendem a problemas tais como a fumigação de citrinos em Espanha, Palestina, Egipto, Africa do Sul, Brasil e Austrália. Também se trabalhou no combate à folha estriada (leaf spot) da bananeira na Jamaica, e na aplicação às árvores de cintas de protecção contra as formigas, no Kenia. Citamos estes casos apenas como provas das experiencias dos membros da A.B.I.M. no combate, por meio de insecticidas e fungicidas, às pragas e doenças que atacam as culturas em todo o mundo. A Associação, com os seus consultores técnicos e os seus práticos, está apta a proceder a todas as nvestigacões especiais necessárias, de colaboração com técnicos das respectivas regiões, para o aperfeiçoamento das medidas de combate contra as pragas e doenças das plantas, onde quer que estas apareçam.

Em resumo, a Associação faculta ao agricultor do alem-mar:—

- (1) A notável pericia técnica da indústria química britânica para a preparação de acreditados insecticidas, fungicidas e produtos relacionados.
- (2) A experiencia patente dos seus técnicos quanto à aplicação dos produtos químicos para o combate às pragas e doenças.
- (3) As possibilidades de resolver, de colaboração com o pessoal técnico das respectivas regiões, qualquer problema de interesse económico no campo do combate às pragas.
- (4) Uma vasta experiencia em expor os conhecimentos técnicos em linguagem que os agricultores práticos possam compreender e usar no seu trabalho.

\* "Fruit Bud Development Charts," Bol. no. 137 do Ministério da Agricultura e Pesca, publicado pela Editorial da S. Majestade, em York House, Kingsway, Londres, W.C.2, preço 2s. 2d. porte gratis.

## VORWORT ZUM ÜBERSEE-ADRESSBUCH DER VEREINIGUNG DER BRITISCHER ERZEUGER VON SCHÄDLINGSBEKÄMPFUNGSMITTELN

EINE gut geleitete Landwirtschaft muss darauf bedacht sein, eine gute Ernte zu erzielen. Die modernen Anforderungen, die einen steigenden Ertrag notwendig machen, verlangen jedoch noch einiges mehr. Intensive Bbaumethoden, Einschränkung der Mehrfelderwirtschaft, Vermehrung der Monokultur (wie in der Plantagen- und Forstwirtschaft) erzeugen besonders günstige Bedingungen für die Vermehrung von Schädlingen und für die schnelle Ausbreitung von Pilzkrankheiten. Eine gute Bewirtschaftung des Bodens muss unter diesen Umständen durch zusätzliche Verwendung von Pflanzenschutzmitteln ergänzt werden—ja, chemische Behandlungsmethoden sind unentbehrlich, wenn schwere Epidemien verhütet werden sollen.

Die Anwendung dieser chemischen Mittel muss, schon aus wirtschaftlichen Gründen, dem Landwirt so einfach wie möglich gemacht werden. Ihre Kosten sind tatsächlich oft weit geringer als die Kosten ihrer Anwendung, jedenfalls aber unbedeutend im Vergleich mit dem Nutzen, den sie bringen oder mit dem Schaden, der verursacht werden könnte, wenn diese Mittel falsch oder ungeschickt verwendet werden. Kurz, ein gutes Mittel richtig angewandt, kann die Rettung einer ganzen Ernte bedeuten, die sonst verloren gewesen wäre—und die Kosten hierfür betragen vielleicht den Bruchteil eines Prozentes des gesamten Ernteertrages. Ein ungeeignetes oder schlecht angewandtes Mittel kann eine Fehlernte in einen totalen Verlust verwandeln. Von keinem Landwirt kann man daher erwarten, dass er ein solches Risiko auf sich nimmt. Er ist vielmehr berechtigt, nicht nur ein erprobtes und empfohlenes Mittel zu verlangen, sondern auch Anweisungen darüber, wie es mit voller Sicherheit für seine besondere Feldfrucht unter seinen besonderen Bodenbedingungen zu verwenden ist. Pflicht des Fabrikanten ist es daher, nicht nur die allgemeine Zuverlässigkeit seines Produkts zu gewährleisten dadurch, dass es unter der Aufsicht von erfahrenen Chemikern hergestellt wird, sondern auch solche Fachleute zu beschäftigen, die mit allen biologischen Problemen vollkommen vertraut sind, welche sich aus der Bekämpfung der Schädlinge und Krankheiten der Feldfrüchte ergeben.

Ein so hoher Standard technischer Vollkommenheit ist natürlich durch Gemeinschaftsarbeit viel leichter zu erreichen als durch separate Versuche einzelner Fabrikanten. Dies wurde von den Gründern der Vereinigung britischer Erzeuger von Schädlingsbekämpfungsmitteln (A.B.I.M.) erkannt. Die Vereinigung wurde im Jahre 1928 als eine besondere Sektion der Vereinigung der britischen chemischen Industrie gegründet. Ihre Aufgabe war, sich ausschließlich auf die Herstellung von Pflanzenschutzmitteln zu beschränken. Der Vereinigung gehörten zu Anfang nur zehn Firmen als Mitglieder an. Aber mit der steigenden Verwendung wissenschaftlicher Methoden im Kampf gegen die Vermehrung der Schädlingsplage stiegen die Forderungen nach verbesserter Qualität der Erzeugnisse, und die Mitgliederzahl der Vereinigung nahm zu. Dreiunddreissig Firmen gehören ihr heute an, d.h. etwa 90 Prozent der britischen Hersteller von Insekt- und Pilz-Vermichtungsmitteln (im Nachfolgenden Schädlingsbekämpfungsmittel genannt).

Es muss hier ausdrücklich betont werden, dass die A.B.I.M. nicht ein Handelsunternehmen ist. Sie hat nichts mit Preisbestimmungen zu tun, noch fördert sie Abkommen zwischen ihren Mitgliedern. Sie ist lediglich eine Plattform für die Diskussion gemeinsamer Probleme zur Verbesserung und fortschreitenden Entwicklung in der Bekämpfung von Schädlingen und Krankheiten durch diese Mittel. Die Vereinigung verfügt damit, zum Nutzen der Verbraucher, neben den hohen technischen Qualifikationen der britischen chemischen Industrie auch über die Dienste ihrer Fachleute auf dem Gebiete der Biochemie, Botanik und Insektenkunde.

Aus diesen Gründen wurde die Vereinigung von dem britischen Landwirtschaftsministerium als repräsentative Stimme der chemischen Industrie anerkannt.

### **Die A.B.I.M. im Kriege**

Als es im Jahre 1939 notwendig wurde, mehr Nahrungsmittel zu erzeugen, erkannte man folgerichtig auch die Notwendigkeit, die Produkte vor tierischen und pflanzlichen Schädlingen zu schützen. Die Vereinigung stellte sich sofort dem Landwirtschaftsministerium zur Verfügung und half in der Ausarbeitung von Notmassnahmen zum Wohle der Landwirte. Im Verlauf des Krieges wurde die Zuteilung vieler Rohmaterialien zur Herstellung dieser Erzeugnisse eingeschränkt, aber das Wirtschaftsministerium war in der Lage, mit Hilfe der Vereinigung eine gleichmässige Verteilung der in beschränkten Mengen verfügbaren Rohstoffe zu sichern. Zusammenarbeit und guter Wille unserer Mitglieder ermöglichte es, dass diese Rohmaterialien nur für die Herstellung der wichtigsten Erzeugnisse zu verwenden. So wurde die Vereinigung der offiziellen Vertreter des Wirtschaftsministeriums für die Zuteilung von Rohmaterialien. Hierbei muss erwähnt werden, dass die Mitglieder diese schwierige Aufgabe in vollstem gegenseitigen Einvernehmen lösten.

Die Vereinigung war ausserdem in der Lage, andere öffentliche Körperschaften zu unterstützen, die den gleichen, durch den Krieg verursachten, Beschränkungen unterworfen waren. So kann als Beispiel hierfür die Unterstützung erwähnt werden, die dem während des Krieges geschaffenen Produktionsministerium auf dem Gebiete der Verpackung gegeben wurde.

### **Amtliche Begutachtung**

Es ist seit langem erkannt worden, dass eine von angesehenen Firmen durchgeführte Vereinheitlichung der Schädlingsbekämpfungsmittel sowohl im Interesse der Verbraucher als auch der Fabrikanten liegt. Mit dieser Frage ist die A.B.I.M. und ihre Vorgängerin, das Amt für Gartenbau, seit vielen Jahren eng vertraut. Der erste Schritt in dieser Richtung wurde im Jahre 1919 unternommen, als auf Verlangen der Gärtner das Amt für Gartenbau gewisse Gebrauchsanweisungen ausarbeitete, welche vom englischen landwirtschaftlichen Ausschuss (dem heutigen Landwirtschaftsministerium) übernommen wurden. Im Jahre 1928 verlangte die nationale Vereinigung der Landwirte eine Revision dieser Anweisungen und die Einführung einer gesetzlichen Regelung ähnlich derjenigen, welche die Qualität der Düngemittel bestimmt. Die Vereinigung wurde zu Rate gezogen und war in der Lage sowohl das Landwirtschaftsministerium als auch die nationale Vereinigung der Landwirte zu überzeugen, dass eine freiwillige Vereinbarung über die Vorschriften einer gesetzlichen Regelung vorzuziehen sei. Das fand seinen Ausdruck in dem vom Landwirtschaftsministerium herausgegebenen Bulletin No. 82—

“Beschreibung und Analysierungsmethode für bestimmte Insecticiden und Fungiciden.” Die Beschreibung wurde gemeinsam von den Forschungsarbeitern der Vereinigung der Hersteller von Schädlingsbekämpfungsmitteln und dem Landwirtschaftsministerium ausgearbeitet—diese Arbeitsmethode erwies sich als so fruchtbar, dass sie später auch in anderen Fällen zur Anwendung kam. Beweis hierfür ist Bulletin No. 122—“Beschreibung und Analysierungsmethode für Teeröl als Winterbespritzungsmittel.”

Während dieses Verfahren sich sehr zufriedenstellend bei Mitteln auswirkte, deren Wirksamkeit durch einfache chemische und physikalische Methoden festgestellt werden konnte, entsprach es bei der wachsenden Kompliziertheit der neuen Pflanzenschutzmitteln nicht mehr den Bedürfnissen der Landwirte oder der beratenden Amtsstellen. Einerseits konnte man von dem Landwirt nicht erwarten, komplizierte chemische Bezeichnungen zu lernen oder zu behalten oder gar die feinen Unterschiede und Verhältniszahlen der Bestandteile zu verstehen, andererseits konnte die beratende Stelle einige der neuen Mittel nicht offiziell empfehlen, weil diese, obwohl von bekannt guter Wirkung, nur ihre Markennamen als Bezeichnung hatten.

Zur Überwindung dieser Schwierigkeiten war es trotz des Krieges gelungen, das gegenwärtige System der amtlichen Begutachtung des Landwirtschaftsministeriums einzuführen. In dieser Beziehung ist die Stellung unserer Vereinigung vom britischen Landwirtschaftsministerium anerkannt worden und zwar derart, dass die Vereinigung vier Vertreter in den gemeinschaftlichen Ausschuss entsendet, eine Körperschaft, welche die Standardbegriffe ausarbeitet und zur Billigung vorschlägt.

Ein Komitee hervorragender unabhängiger Wissenschaftler des Ministeriums untersucht dann die biologische Wirksamkeit eines Erzeugnisses und prüft genau sowohl die Gebrauchsanweisung als auch die Angaben der Hersteller bezüglich des Produkts. Jedes Schädlingsbekämpfungsmittel, das den Billigungsvermerk trägt, kann daher in England mit vollem Vertrauen angewandt werden.

Dieses Billigungsvermerk, ist nur mit Bezug auf englische Verhältnisse erteilt. Wenn es daher auf exportierten Schädlingsbekämpfungsmitteln nicht erscheint, so sind diese Mittel trotzdem von gleicher Wirksamkeit in solchen Ländern, deren Klima und sonstige biologische Verhältnisse denen von Grossbritannien ähnlich sind. Bei Spezialprodukten und besonders bei solchen, die für Übersee hergestellt werden, wird der gleiche hohe Produktionsstandard beibehalten.

Man ist sich klar darüber, dass diese Methode nur ein erster Schritt vorwärts ist, und dass die Notwendigkeit besteht, die Standardbegriffe weiter zu heben.

#### **Exportabteilung und U.N.R.R.A.**

Für die Erfordernisse des Exports wurde von Mitgliedern der A.B.I.M. die Exportgruppe für chemische Schädlingsbekämpfung gegründet. Diese Gruppe stand für die notwendigen Lieferungen zur Verfügung, sobald die europäischen Länder befreit waren und ihr Bedarf an Schädlingsbekämpfungsmitteln bekannt wurde. Zusammen mit der U.N.R.R.A. konnte die Vereinigung daher bei der Verteilung von Mitteln zur Schädlingsbekämpfung wertvolle Dienste



leisten. Viele dringende Probleme traten auf, und ungeachtet des Mangels an Arbeitskräften, Packmaterial, Transportmitteln und, in einigen Fällen, Rohmaterial war die Exportgruppe in der Lage, allen Anforderungen der U.N.R.R.A. ohne Verzug nachzukommen.

### **Forschung und Entwicklung**

Sobald es möglich war mit der Nachkriegsplanung zu beginnen, ernannte die Vereinigung ein wissenschaftliches Komitee, um so rasch wie möglich einen Plan für zukünftige Forschung und Entwicklung vorzulegen. In diesem wissenschaftlichen Komitee sitzen Sachverständige aus, allen Gebieten der Schädlingsbekämpfung. Der von ihnen vorgelegte Plan wurde vom Landwirtschaftsministerium angenommen und gilt als die bisher umfassendste Arbeit auf dem Gebiet der Schädlingsbekämpfung. Da dieser Plan in der Hauptsache dem Wohle der Allgemeinheit dient, sind zurzeit Verhandlungen mit dem Landwirtschaftsministerium darüber im Gange, inwieweit öffentliche Gelder hierfür verwendet werden können. Die Vereinigung ist überzeugt, dass das Gesamtprogramm, wie es von ihrem wissenschaftlichen Komitee vorgelegt wurde, unbedingt durchgeführt werden muss und ist daher bereit, dessen Durchführung mit allen geeigneten Mitteln durchzusetzen.

Die Vereinigung wird häufig in wissenschaftlichen Fragen um Rat ersucht und hat bereits mehrfach in der Formulierung von Beschreibungen wertvolle Hilfe geleistet. Einer ihrer bemerkenswertesten Beiträge zur technischen Durchführung der Schädlingsbekämpfung ist die Herausgabe der neuen Obstbaumknospen-Entwicklungstabelle.\* Diese Tabelle, die vom Landwirtschaftsministerium und der Vereinigung gemeinsam ausgearbeitet wurde, bedeutete einen grossen Fortschritt in der Anwendung von Bespritzungsmitteln für Obstbäume. Sie koordiniert die Anweisungen zur Bespritzung mit dem jeweiligen Stand der Forschung, und ersetzt somit frühere willkürliche und unzuverlässige Angaben.

Obwohl Mittel zur Unkrautvertilgung gegen Insekten und Pilze wirkungslos sind, so ist es doch interessant festzustellen, dass auch dieses neue Hilfsmittel der Landwirtschaft wesentlich von A.B.I.M.—Mitgliedern entwickelt wurde.

### **A.B.I.M. und Übersee-Pflanzer**

Der Nutzen der Tätigkeit der A.B.I.M. beschränkt sich nicht nur auf den Inlandmarkt. Man kann ihn überall in der Welt feststellen, wo Landwirtschaft betrieben wird und zwar auf den verschiedensten Gebieten. Dazu gehört zum Beispiel das internationale Problem der Heuschreckebekämpfung, der Termitenplage und der tropischen Wurzelfäulnis; ferner die Rauchbehandlung der Zitrusfrüchte in Spanien, Palästina, Ägypten, Südafrika, Brasilien und Australien, die Bekämpfung der Fleckenkrankheit der Bananenblätter in Jamaica und die Baumschutzbehandlung in Kenya. Dies sind nur einige Beispiele der von den Mitgliedern der A.B.I.M. gesammelten Erfahrungen in der Bekämpfung von Schädlingsplagen, welche die Ernten der Welt gefährden. Die wissenschaftlichen und praktischen Berater der Vereinigung sind in

\* Exemplare der Ausgabe (Bulletin) No. 137 des Landwirtschaft- und Fischerei-Ministeriums mit Erläuterungen über Fruchtknospen-Entwicklung sind bei folgender Stelle erhältlich: H.M. Stationery Office, York House, Kingsway, London, W.C.2, Preis sh.2/2d. franko

der Lage spezielle Untersuchungen anzustellen, um zusammen mit den örtlichen wissenschaftlichen Forschern die notwendigen Massnahmen zur Bekämpfung der Schädlingsplagen zu ergreifen, wo immer sie auftreten.

Kurz gefasst, die Vereinigung hat dem Pflanzer in Übersee folgendes zu bieten:—

- (1) Die hohen technischen Kenntnisse der britischen chemischen Industrie in der Herstellung von verlässlichen Schädlingsbekämpfungsmitteln und von verwandten Produkten.
- (2) Die reichen Erfahrungen ihrer Fachleute in der Anwendung dieser chemischen Produkte zur Bekämpfung der Schädlinge und Krankheiten.
- (3) Sie hat die Möglichkeiten und die Mittel, in Verbindung mit den örtlichen Beratungsstellen jedem Problem auf dem Gebiete der Schädlingsbekämpfung zu begegnen, das von allgemeiner wirtschaftlicher Bedeutung ist.
- (4) Langjährige Erfahrung in Darlegung technischer Kenntnisse in einer Form, die der ausübende landwirt verstehen und zur Anwendung bringen kann.

## ВВЕДЕНИЕ В ИНОСТРАННУЮ АДРЕСНУЮ КНИГУ АССОЦИАЦИИ ФАБРИКАНТОВ НАСЕКОМО- ИСТРЕБИТЕЛЬНЫХ ПРЕПАРАТОВ, В АНГЛИИ

Тщательность возделывания в сельском хозяйстве всегда будет основным фактором для получения хороших урожаев. Однако, современные условия требуют непрерывного увеличения продукции, и это одно является недостаточным. Интенсивные методы возделывания, сокращение севооборота и распространение монокультур, как в плантациях и лесоводстве, создают особенно благоприятные условия для быстрого размножения сельскохозяйственных вредителей и микроорганизмов, быстро распространяющихся болезней. В таких условиях тщательные методы возделывания должны дополняться применением химических веществ—более того, химические методы борьбы с сельскохозяйственными вредителями необходимы для того, чтобы избежать серьезных эпидемий.

Уже одни экономические соображения требуют, чтобы применение таких химических веществ было насколько возможно несложным для земледельца. Действительно, стоимость этих веществ часто значительно ниже расходов по применению их и, как правило, совершенно ничтожна по сравнению с приносимой ими пользой или с вредом, который может быть иногда причинен неправильным или неумелым употреблением их. Короче говоря, умелым применением хорошего средства можно спасти весь урожай, который в противном случае был бы обречен на гибель, расходуя на средство, вероятно, лишь долю одного процента ценности сборов. С другой стороны, неподходящее средство, или же неправильное применение средства, может превратить частичный неурожай в полную потерю сборов. Такому риску ни один земледelec не должен подвергаться. Он в праве требовать не только испытанного средства, но и сведений относительно безопасного и надежного применения его к своим культурам и в своих особенных условиях. Таким образом, на обязанности фабриканта лежит не только обеспечение постоянной надежности средства, изготовляя его под надзором квалифицированных химиков, но также содействие экспертов, обладающих полным знанием всех биологических проблем, могущих возникнуть при борьбе с вредителями и болезнями сельскохозяйственных культур.

Такой высокий уровень технического превосходства значительно легче обеспечивается сотрудничеством, чем индивидуальными усилиями отдельных фабрикантов. Это сознавалось основателями Ассоциации Британских фабрикантов Инсектицидов—A.B.I.M. (Association of British Insecticide Manufacturers), основанной в 1928 году, как секция специалистов Ассоциации Британских Химических фабрикантов (Association of British Chemical Manufacturers). Исключительной задачей этой секции было изучение химических веществ, применяемых в качестве инсектицидов и фунгицидов (т.е. уничтожающих вредных насекомых и грибных нарывов). В начале десять фирм стало членами Ассоциации, однако количество членов возрастало по мере распространения применения

научных методов борьбы с вредителями и болезнями сельскохозяйственных культур, предъявляя новые требования к качеству продукции. В настоящее время в состав членов входит около 90% всех более крупных и известных британских фабрикантов инсектицидов и фунгицидов, и насчитывает тридцать отдельных предприятий.

Следует отметить, что А.В.И.М. не является коммерческим предприятием. Ассоциация не имеет никакого отношения к установлению цен и не содействует соглашениям между своими членами. Единственной целью Ассоциации является обсуждение вопросов общего интереса, главным образом, усовершенствования инсектицидов и фунгицидов и прогресса в их применении для борьбы с сельскохозяйственными вредителями и болезнями. Таким образом, Ассоциация предоставляет потребителям не только богатый технический опыт британских химических фабрикантов, но также и услуги экспертов по биохимии, ботанике и энтомологии, входящих в состав персонала предприятий ее членов.

В виду этого Ассоциация признается в настоящее время Британским Министерством Сельского Хозяйства, как представитель взглядов данной области промышленности.

#### Деятельность А.В.И.М. во время войны

Необходимость повышения производства пищевых продуктов и связанное с этим существенное значение защиты наших посевов от болезней и сельскохозяйственных вредителей были быстро признаны в 1939 году. Ассоциация немедленно предоставила свою организацию в распоряжение Мин. Сельского Хозяйства и была в состоянии оказать содействие при составлении чрезвычайных законопроектов по улучшению условий работы в сельском хозяйстве. Развитие военных действий вызвало сокращение поставок многих сырых материалов, употребляемых для производства наших продуктов, и Мин. Снабжения поручило Ассоциацию обеспечить справедливое распределение ограниченного количества сырья. Сотрудничество и добрая воля наших членов сделали возможным ограничить применение этого сырья лишь для существенных целей. Таким образом, Ассоциация стала официальным представителем Мин. Снабжения по распределению сырых материалов. В связи с этим следует упомянуть, что выполнение этой трудной задачи не сопровождалось никакими разногласиями между членами Ассоциации.

Кроме того, Ассоциация была в состоянии оказывать помощь и другим официальным учреждениям при преодолении затруднений, вызванных ограничениями военного времени. Выдающимся примером такой деятельности Ассоциации являлось содействие, оказанное ею Мин. Продукции военного времени при разработке норм на упаковку.

#### Схема одобренных средств

Давно признано, что стандартизация инсектицидов и фунгицидов изготовителями пользующимися высокой репутацией лежит в интересах, как потребителей, так и самих изготовителей. С этим вопросом уже много лет тесно связана деятельность

А.В.И.М., а также предшествовавшей ей Палаты Садоводства. Первый шаг в этом направлении был предпринят в 1919 году, когда по просьбе сельских хозяев Палата Садоводства разработала ряд норм, которые были приняты Английским Департаментом Сельского Хозяйства, ныне Мин. Сельского Хозяйства. В 1928 году Британский Национальный Союз фермеров предложил пересмотр этих норм и введение законодательства, соответствующего существующему законодательству по качеству удобрений. Во время последовавших совещаний Ассоциация смогла убедить как Министерство, так и Союз фермеров в том, что добровольное соблюдение согласованных норм предпочтительно законодательству. В результате был опубликован Бюллетень Мин. Сельского Хозяйства, No. 82, озаглавленный "Нормы и методы анализа некоторых инсектицидов и фунгицидов." Эти нормы были разработаны совместно научными сотрудниками А.В.И.М. Такой метод работы оказался настолько удовлетворительным, что впоследствии применялся и в других случаях, в частности при составлении важного бюллетеня No. 122 под заглавием "Нормы и методы анализа зимних дегтярных образцов."

Такие методы являлись весьма удовлетворительными в применении к продуктам, которые могли легко оцениваться на основании своих химических и физических качеств. Однако, в виду увеличивающейся сложности новых инсектицидов и фунгицидов, оценка на основании норм перестала отвечать требованиям, как сельских хозяев, так и консультантов. С одной стороны, нельзя было ожидать, чтобы сельский хозяин мог заучить и помнить сложные химические названия и отдавать себе отчет в тонких различиях и пропорциях составных частей; с другой стороны, консультанты не могли при исполнении своих служебных обязанностей рекомендовать употребление некоторых из новых продуктов, так как, хотя эти продукты и были им известны своими превосходными качествами, они не соответствовали ни одной из официальных норм.

Для преодоления этих затруднений оказалось возможным, несмотря на тяжелые условия военного времени, ввести действующую ныне схему одобрения Мин. Сельского Хозяйства. Роль Ассоциации в этом деле признана Мин. Сельского Хозяйства, так что Ассоциации предоставлено право назначения четырех представителей в общий комитет, являющийся органом, уполномоченным вводить стандарты и устанавливать нормы для одобрения.

В дополнение к этому, другой комитет Министерства, состоящий из выдающихся независимых научных работников, изучает биологические свойства средств и строго проверяет как инструкции по применению данного средства, так и заявления фабриканта относительно свойств средства. Таким образом, всеми инсектицидами и фунгицидами, снабженными официальным клеймом одобрения, можно пользоваться с полной уверенностью.

Применение клейма одобрения, воспроизведенного выше с официального разрешения, неизбежно ограничивается территорией Великобритании. Хотя, поэтому, этим клеймом не снабжены вывозимые из Великобритании инсектициды и фунгициды, они вполне применимы в странах, климатические и другие биологические условия которых схожи с условиями в Великобритании. Столь же высоким требованиям

отвечают и измененные продукты, а также продукты, специально изготовляемые для применения вне Великобритании.

Таким образом, соответственно схеме одобряется известное количество групп средств, что дает возможность официальным учреждениям, фабрикантам и потребителям идентифицировать одобренные средств согласно простых, присвоенных им, названий. Признается, что теперешняя схема является лишь одним шагом вперед и ясно предусматривается необходимость постепенного повышения требований. Ассоциация готова консультировать и оказывать содействие, как только дальнейший прогресс станет возможным.

#### Экспортная Группа и УНРРА

Для решения вопросов, связанных с экспортом, членами А.В.І.М. была образована Группа для Экспортирования Химических Продуктов против Сельскохозяйственных Вредителей. Эта группа тотчас-же была в состоянии организовать снабжение для европейских стран после их освобождения, и как только становились известными их нужды в материалах для борьбы с сельскохозяйственными вредителями. В сотрудничестве с УНРРОЙ А.В.І.М. смогла, таким образом, оказать ценные услуги в деле распределения инсектицидов и фунгицидов. Группе пришлось сталкиваться со многими весьма срочными вопросами и, несмотря на недостаток рабочей силы, упаковочных материалов, транспортных средств и, в некоторых случаях, также и сырых материалов, она оказалась в состоянии без отлагательств удовлетворять все требования УНРРЫ.

#### Научно-исследовательская работа и прогресс

Как только открылись возможности послевоенного планирования, Ассоциацией был назначен Научный Комитет для составления программы научных исследований и нововведений с тем, чтобы приступить к необходимым работам по возможности скорее. Этот Научный Комитет состоит из экспертов по всем отраслям дела борьбы с сельскохозяйственными вредителями и болезнями. Выработанная Комитетом программа была принята Мин. Сельского Хозяйства и считается самым полным, составленным до сих пор, обзором научных исследований, которые должны быть проведены в интересах сельских хозяев в борьбе с вредителями и болезнями. В виду того, что выполнение программы лежит в насущных общественных интересах, в настоящее время ведутся переговоры с Мин. Сельского Хозяйства относительно того, в какой степени на это дело могут быть ассигнованы государственные средства. Ассоциация убеждена, однако, в необходимости осуществления всей программы, рекомендуемой ее Научным Комитетом, и готова приложить все старания к выполнению этой программы, используя для этого наиболее подходящие в данных условиях средства.

С Ассоциацией часто советуется по научным проблемам, и она смогла оказать ценное содействие при составлении норм. Одним из выдающихся вкладов Ассоциации в технику борьбы с сельскохозяйственными вредителями является составление новых таблиц ботанического опрыскивания. Эти таблицы, составленные совместно Мин. Сельского Хозяйства и Ассоциацией, сделали также возможным важнейшие продвижения

в применении опрыскивания к плодовым деревьям. Таблицы согласуют инструкции по опрыскиванию с состоянием развития деревьев, вместо того, чтобы основываться на произвольных и ненадежных данных.

Хотя продукты для избирательного уничтожения сорняков гербисиды не являются ни инсектицидами, ни фунгицидами, интересно отметить, что усовершенствование этого средства для обеспечения богатых сборов были в значительной мере достигнуты членами A.V.I.M.

A.V.I.M. и зарубежные земледельцы

Помощь, оказываемая Ассоциацией, не ограничивается британским рынком. Она предоставляется везде в мире, где возделываются посевы, и занимается исследованием таких международных проблем, как борьба с саранчой, термитами и тропической корневой гнилью, и многих других вопросов, вплоть до таких, как окулировка цитрусовых культур в Испании, Палестине, Египте, Южной Африке, Бразилии и Австралии. Ассоциацией проводятся исследования пятнистой болезни банановых листьев в ямайке и жиров для ловчих колец в Кении. Все это лишь некоторые примеры достижений членов Ассоциации по применению инсектицидов и фунгицидов для борьбы с вредителями посевов и насаждений во всех странах мира. Ассоциация и ее научные и практические консультанты располагают всем необходимым оборудованием для проведения специальных исследований, требующихся для создания, в сотрудничестве с местными научными работниками, средств борьбы с вредителями и болезнями посевов везде, где они могут встречаться.

Резюмируя вышесказанное, Ассоциация в состоянии предоставлять в распоряжение зарубежных сельских хозяев следующее:—

- (1) Высокое техническое мастерство британской химической промышленности в области изготовления надежных инсектицидов, фунгицидов и родственных продуктов.
- (2) Несравнимый опыт своих экспертов и фирм, состоящих членами Ассоциации, по применению химических продуктов для борьбы с сельскохозяйственными вредителями и заболеваниями.
- (3) Богатые ресурсы и умение принимать на себя, совместно с местными консультантами, изучение всяких проблем экономического значения в области борьбы с сельскохозяйственными вредителями.
- (4) Продолжительный опыт по передаче технических познаний в форме, понятной сельскому хозяину, и позволяющей ему применять их в своей работе.

SECTION I

DIRECTORY

of

MEMBER FIRMS





## DIRECTORY OF MEMBER FIRMS.—Section 1

### ACME CHEMICAL CO.

**HEAD OFFICE :** *Bedfont Road, Stanwell, Middlesex.*  
**WORKS :** *Bedfont Road, Stanwell, Middlesex.*  
**Telephone Number :** *Ashford, Middlesex, 2281/2/3.*  
**Telegraphic Address :** *Acme, Stanwell.*  
**Codes :** *A.B.C. 5th and 6th Editions; Bentley's.*  
**Products :** *Insecticides ; fungicides ; weedkillers ; pest destroyers ; powder blowers for distributing finely ground powders.*  
**Advertisement :** *Page (i).*

### ALLEN, STAFFORD & SONS LTD.

**HEAD OFFICE :** *20 Wharf Road, London, N.1.*  
**WORKS :** *20-42 Wharf Road, London, N.1,  
Cowper Street, London, E.C.2, and  
Stafford Works, Long Melford, Suffolk.*  
**Telephone Number :** *Clerkenwell 1000.*  
**Telegraphic Address :** *Stafalens, London.*  
**Codes :** *A.B.C. 6th Edition, Bentley's and Appendix.*  
**Products :** *Insecticides containing pyrethrum, DDT, derris and quassia.*  
**Advertisement :** *Page (ii).*

### BERK, F. W. & CO. LTD.

**HEAD OFFICE :** *Commonwealth House, 1-19 New Oxford Street,  
London, W.C.1.*  
**WORKS :** *Abbey Mills Chemical Works, Stratford, E.15, and  
Pentrepeth Chemical Works, nr. Swansea.*  
**Telephone Number :** *Chancery 6041.*  
**Telegraphic Address :** *Berk, Westcent, London.*  
**Codes :** *A.B.C. 5th, 6th, 7th Editions; Bentley's; Acme; Lieber's.*  
**Products :** *Mercury compounds ; seed disinfectants ; mercurial insecti-  
cides and fungicides ; copper and sulphur fungicides ;  
derris and pyrethrum insecticides.*  
**Advertisement :** *Page (iii).*

### BRITISH NICOTINE CO. LTD.

**HEAD OFFICE :** *East Street, Bedminster, Bristol 3.*  
**WORKS :** *Lyster Road, Bootle, Lancashire.*  
**Telephone Number :** *Bootle, near Liverpool, 3662/3.*  
**Telegraphic Address :** *Fumigate, Liverpool.*  
**Products :** *Nicotine alkaloid ; nicotine sulphate 40%.*  
**Advertisement :** *Page (iv).*

## **Section I.—DIRECTORY OF MEMBER FIRMS**

### **BUGGÉ'S INSECTICIDES LTD.**

HEAD OFFICE : Sittingbourne, Kent.  
WORKS : Sittingbourne, Kent.  
Telephone Number : Sittingbourne 475/6.  
Telegraphic Address : Fluorated, Phone, Sittingbourne.  
Codes : A.B.C., Bentley's, Private.  
Products : Insecticides; fungicides; sterilising fluids for agricultural and horticultural use.  
Advertisement : Page (v).

### **BURT, BOULTON & HAYWOOD LTD.**

HEAD OFFICE : Brettenham House, Lancaster Place, Strand, London, W.C.2.  
WORKS : Prince Regent's Wharf, Silvertown, London, E.16.  
Telephone Number : Temple Bar 5801/8.  
Telegraphic Address : Burboul, Rand, London.  
Codes : Bentley's Zebra 4th Edition.  
Products : Copper fungicides; sulphur fungicides; tar and petroleum oil washes; nicotine dusts; derris preparations, etc.  
Advertisement : Page (vi).

### **CRAVEN, W. J. & CO. LTD.**

HEAD OFFICE : 48/50 Port Street, Evesham, Worcs.  
WORKS : The Leys, Evesham, and Church Street, Evesham.  
Telephone Number : Evesham 6138.  
Telegraphic Address : Craven, Evesham 6138.  
Codes : A.B.C. 5th Edition.  
Products : Insecticides; fungicides; banding material; soil fumigants; spraying and dusting machines.  
Advertisement : Page (vii).

### **HEMINGWAY & CO. LTD.**

HEAD OFFICE : 28 Marsh Gate Lane, Stratford, E.15.  
WORKS : 28 Marsh Gate Lane, Stratford, E.15.  
Telephone Number : Maryland 1888/9, 1880.  
Telegraphic Address : Hemway, Strat, London.  
Codes : A.B.C. 5th and 6th Editions; Bentley's Second.  
Products : Lead arsenate, calcium arsenate, paris green and other arsenical insecticides; copper fungicides.  
Advertisement : Page (viii).

**DIRECTORY OF MEMBER FIRMS.—Section I**

**INTERNATIONAL TOXIN PRODUCTS LTD.**

HEAD OFFICE : Northwich, Cheshire.  
WORKS : Jubilee Street, Northwich, Cheshire.  
Telephone Number : Northwich 2935, 2603, 4223/4.  
Telegraphic Address : Intoxin, Northwich.  
Products : Agricultural and horticultural insecticides and fungicides and fertilisers.  
Advertisement : Page (ix).

**KILLGERM CO. LTD.**

HEAD OFFICE : Cleckheaton, Yorks.  
WORKS : Cleckheaton, Yorks.  
Telephone Number : Cleckheaton 557.  
Telegraphic Address : Disinfect, Cleckheaton.  
Codes : A.B.C. 5th and 6th Editions; Bentley's.  
Products : Tar and petroleum oil washes.  
Advertisement : Page (x).

**LUNEVALL PRODUCTS LTD.**

HEAD OFFICE : Queen's Mill, Lancaster.  
WORKS : Queen's Mill, Lancaster.  
Telephone Number : Lancaster 398, 1029.  
Telegraphic Address : Products, Lancaster.  
Codes : A.B.C. 5th and 6th Editions.  
Products : Organo-mercury seed dressings; insecticides and fungicides.  
Advertisement : Page (xi).

**MAY & BAKER LTD.**

HEAD OFFICE : Dagenham, Essex.  
WORKS : Dagenham, Essex.  
Telephone Number : Ilford 3060.  
Telegraphic Address : Bismuth, Phone, London.  
Codes : A.B.C. 6th Edition; Bentley's; Mosse's.  
Products : Copper fungicides; mercurial fungicides; dinitro-*o*-cresol washes; fumigants, including methyl bromide; miscellaneous horticultural chemicals; synthetic hormones; weedkillers.  
Advertisement : Page (xii).

## **Section I.—DIRECTORY OF MEMBER FIRMS**

### **MONRO, GEO., LTD.**

HEAD OFFICE : Hertford Road, Waltham Cross, Herts.  
WORKS : Hertford Road, Waltham Cross, Herts.  
Telephone Number : Waltham Cross 3663.  
Telegraphic Address : Monro, Waltham Cross.  
Codes : A.B.C. 5th and 6th Editions; Bentley's; Marconi and Wood Code 2nd.  
Products : Horticultural insecticides, fungicides and other sundries.  
Advertisement : Page (xiii).

### **MURPHY CHEMICAL CO. LTD., THE**

HEAD OFFICE : Wheathampstead, near St. Albans, Herts.  
WORKS : Wheathampstead, near St. Albans, Herts.  
Telephone Number : Wheathampstead 2177.  
Telegraphic Address : Alvesco, Wheathampstead.  
Codes : A.B.C. 5th and 6th Editions; Marconi.  
Products : Insecticides and fungicides of all types for the protection of agricultural, horticultural and glasshouse crops and mushroom; soil sterilisers; fumigants; weedkillers; spray spreaders; tar oil, petroleum oil, tar-petroleum, dinitrocresol and thiocyanate winter washes; white oil sprays; sulphur and copper fungicides; derris, lonchocarpus, nicotine and DDT dusts and sprays; DDT and azobenzene smokes.  
Advertisement : Page (xiv).

### **NEWTON CHAMBERS & CO. LTD.**

HEAD OFFICE : Thorncliffe, near Sheffield.  
WORKS : Thorncliffe, near Sheffield.  
Telephone Number : Thorncliffe 38171.  
Telegraphic Address : Newton, Sheffield.  
Codes : A.B.C. 5th Edition.  
Products : Chemical soil sterilisers; glasshouse disinfectants; tar-acid weedkillers; horticultural sprayers; soil injectors.  
Advertisement : Page (xv).

### **PAN BRITANNICA INDUSTRIES LTD.**

HEAD OFFICE : 14 Waterloo Place, S.W.1.  
WORKS : Britannica Works, Waltham Abbey, Essex.  
Telephone Number : Waltham Cross 3215/6.  
Telegraphic Address : Panbritan, Waltham Cross.  
Codes : A.B.C. 5th and 6th Editions; Bentley's.  
Products : Insecticides and fungicides, dry or wet application for all agricultural and horticultural purposes.  
Advertisement : Page (xvi).

## DIRECTORY OF MEMBER FIRMS.—Section I

### PATERSON, JOHN & CO. LTD.

HEAD OFFICE : 281 Orr Street, Glasgow, S.E.  
WORKS : Clensel Works, Orr Street, Glasgow, S.E.  
Telephone Number : Bridgeton 2004.  
Telegraphic Address : Clensel, Glasgow.  
Codes : A.B.C. 5th Edition; Bentley's.  
Products : Horticultural sprays; petroleum oil washes.  
Advertisement : Page (xvii).

### PEST CONTROL LTD.

HEAD OFFICE : Bourn, Cambridge.  
WORKS : Harston, Cambridge.  
Telephone Number : Cambridge 56961.  
Telegraphic Address : Pestcont, Cambridge.  
Codes : A.B.C. 5th and 6th Editions; Bentley's.  
Products : Insecticides; weedkillers; fungicides; plant hormones;  
agricultural spraying machines.  
Advertisement : Page (xviii).

### PLANT PROTECTION LTD.

HEAD OFFICE : Nobel House, Buckingham Gate, S.W.1.  
WORKS : Yalding, Kent.  
Telephone Number : Victoria 4444.  
Telegraphic Address : Plantector, Sowest, London.  
Codes : Bentley's; Private.  
Products : Insecticides; fungicides; seed dressings; plant hormones and  
weedkillers.  
Advertisement : Page (xix).

### RICHARDS, G. H. LTD.

HEAD OFFICE : 234 Borough High Street, London, S.E.1.  
WORKS : London.  
Telephone Number : Hop 0376.  
Telegraphic Address : Vaporising, London.  
Codes : Bentley's; Lieber 5-letter; Marconi International.  
Products : Nicotine fumigating and spraying preparations; nicotine  
dust; lawn sand; grafting wax; arsenical weedkiller; soil  
sterilisers, etc.  
Advertisement : Page (xx).

## **Section I.—DIRECTORY OF MEMBER FIRMS**

### **SHELL CHEMICALS LTD.**

HEAD OFFICE : 112 Strand, W.C.2.  
WORKS : Shellhaven Installation, Shellhaven, Stanford-le-Hope,  
Essex.  
Telephone Number : Temple Bar 4455.  
Telegraphic Address : Shellchem, Rand, London.  
Codes : All codes used.  
Products : Petroleum oil, DNC/petroleum oil and tar-oil winter  
washes; summer petroleum, white oil and fungicide/oil  
washes; wetters and spreaders; copper fungicides; sulphur  
fungicides; derris (lonchocarpus) ground root and extract;  
nicotine; lead arsenate; plant hormone preparations; soil  
fumigants.  
Advertisement : Page (xxi).

### **WARDLE, SIR THOMAS & ARTHUR LTD.**

HEAD OFFICE : Churnet Works, Macclesfield Road, Leek, Staffs.  
WORKS : Churnet Works, Macclesfield Road, Leek, Staffs.  
Telephone Number : Leek 631.  
Telegraphic Address : Churnet, Leek.  
Products : Dinitro-ortho-cresol preparations; xanthates; synthetic  
organic preparations.  
Advertisement : Page (xxii).

SECTION II

DIRECTORY

of

PRODUCTS and SERVICES





## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

### (1) BANDING MATERIALS

The wingless females of a number of Geometrid moths, notably winter moth, mottled umber moth and the March moth, have the habit of crawling up the trunks of fruit trees in the autumn to lay their eggs on the twigs.

Grease banding offers a very useful means of arresting these moths and preventing egg laying in the trees. Bands of a sticky composition, about  $1/16$ " to  $1/8$ " thick and 2" to 3" wide, are placed round the trunk about breast height at the appropriate time. For mature trees the material may be applied direct to the clean bark, but for young trees it is usual for the grease banding to be applied over a greaseproof paper, tied tightly round the trunk. Ascending moths are caught and die on the bands.

The bands may be left on all the year round, and should be combed at intervals to remove dead insects and debris. They then have the additional advantage that they catch numbers of apple blossom weevils ascending the trunks after hibernation in the spring. They also kill numbers of capsids and miscellaneous weevils which are knocked off the trees by spraying, rain or high wind, and which are caught on the way back to the branches via the trunk.

Banding greases have a number of other uses in markets abroad, notably in arresting the spread of mealy bug on coffee by preventing the ants which attend them from carrying them into the trees.

The majority of banding greases are proprietary products possessing certain special physical characteristics. They must remain sticky over wide ranges of temperature and humidity, and must be resistant to rain. They must not "run" at summer sun temperatures, nor must they "film over" after long exposure to bright sunlight and air.

<i>Products</i>	<i>Manufacturers</i>
<b>BANDING GREASE</b>	Buggé's Insecticides Ltd.
Colle anti-chenilles.	W. J. Craven & Co. Ltd.
Grasa para vendajes.	Geo. Monro Ltd.
Bindender Raupenleim.	Pan Britannica Industries Ltd.
Graxa para faixas.	Plant Protection Ltd.
Ленточная смазка.	G. H. Richards Ltd.
	Shell Chemicals Ltd.
<b>IMPREGNATED BANDS</b>	Buggé's Insecticides Ltd.
Bandes imprégnées.	W. J. Craven & Co. Ltd.
Vendas impregnadas.	Geo. Monro Ltd.
Imprägnierte Bänder.	Pan Britannica Industries Ltd.
Faixas impregnadas.	
Пропитанные ленты.	

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

### (2) FUMIGANTS

Hydrogen cyanide, or HCN, is the outstanding example among fumigants, and its widest use has been in the "tent" fumigation of citrus trees for scale insect control. It was originally generated in the "pot" method by dropping sodium cyanide into dilute sulphuric acid and, subsequently, by exposing calcium cyanide powder to atmospheric moisture. To-day, by far the largest world usage is by means of cylinders of HCN in liquid form, which vaporises immediately on release through suitable pump nozzles.

Powders containing calcium cyanide and cyanide mixtures are widely used for a range of other fumigation purposes. Notable among these are the extermination of termites, ants, wasps and hornets in their nests and the killing of aphides, white fly and other insects in glasshouses.

Also of very great importance is nicotine, available as the free alkaloid, usually of 95 to 98 per cent. purity, and as a solution of its salt, nicotine sulphate, containing 40 per cent. nicotine. When sprayed in aqueous solution these act as both fumigants and contact poisons and are specially valuable against aphides and other sucking insects. Other nicotine fumigants used in glasshouses include cones, papers and shreds impregnated with nicotine which when ignited and allowed to smoulder liberate the volatile principle.

The use of nicotine has recently been extended by new methods of vaporisation, whereby the exhaust gases from a tractor engine are employed to provide quick volatilisation of the fumigant and a lethal concentration is maintained by directing the vapour under a dragsheet towed over the crop.

Paradichlorobenzene is a solid which vaporises to give an insecticidal vapour. It is used in considerable quantity as a soil fumigant for the control of cane-grub in such countries as Queensland. It is sometimes dissolved in carbon disulphide for this purpose. Carbon disulphide itself is also used as a soil fumigant for the control of *Phylloxera* on vines, Colorado beetle on potatoes and to kill various soil insects in glasshouses. All soil fumigants work best in relatively dry open soils.

Among miscellaneous fumigants may be mentioned naphthalene, used as a soil fumigant, and as a glasshouse fumigant for the control of red spider mite. In the latter case speed of action may be increased by using a vaporising lamp. Sulphur preparations are used to kill species of *Arachnida* (gall mites) and red spider. Finally, tetrachlorethane is the basis of many proprietary fumigants used against white fly in glasshouses.

<i>Products</i>	<i>Manufacturers</i>
<b>CARBON DISULPHIDE</b>	W. J. Craven & Co. Ltd.
Sulfure de Carbone.	Pan Britannica Industries Ltd.
Disulfuro de carbono.	Plant Protection Ltd.
Schwefelkohlenstoff.	
Disulfuro de carbono.	
Сернистый углерод.	
<b>HYDROGEN CYANIDE PRODUCTS</b>	Buggé's Insecticides Ltd.
Produits à base de Cyanure d'Hydrogène.	Geo. Monro Ltd.
Productos de cianuro de hidrógeno.	Murphy Chemical Co., Ltd.
Wasserstoffcyanide Producte.	Pan Britannica Industries Ltd.
Produtos de cianuro de hidrogeno.	Plant Protection Ltd.
Водородно-цианидные продукты.	

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>METHYL BROMIDE</b>	May & Baker Ltd.
<b>NAPHTHALENE</b>	Acme Chemical Co.
Naphtaline.	Buggé's Insecticides Ltd.
Naftalina.	Burt, Boulton & Haywood Ltd.
Naphtalin.	W. J. Craven & Co. Ltd.
Naftalina.	Killgerm Co. Ltd.
Нафталин.	Geo. Monro Ltd.
	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
	G. H. Richards Ltd.
<b>NICOTINE FUMIGATING PREPARATIONS</b>	Buggé's Insecticides Ltd.
Préparations pour Fumigation à base de Nicotine.	W. J. Craven & Co. Ltd.
Preparaciones fumigantes de nicotina.	Geo. Monro Ltd.
Nikotin Ausräucherpräparate.	Pan Britannica Industries Ltd.
Preparações fumigantes de nicotina.	Plant Protection Ltd.
Никотиновые препараты для окуливания.	G. H. Richards Ltd.
<b>PARADICHLORBENZENE</b>	Plant Protection Ltd.
Paradichlorobenzène.	
Paradiclorobencina.	
Paradichlorbenzol.	
Paradichlorobenzina.	
Пара-ди-хлор-бензол.	
<b>SULPHUR PREPARATIONS</b>	Acme Chemical Co. Ltd.
Préparations soufrées.	F. W. Berk & Co. Ltd.
Preparaciones de azufre.	Buggé's Insecticides Ltd.
Schwefel Präparate.	Burt, Boulton & Haywood Ltd.
Preparações de enxofre.	W. J. Craven & Co. Ltd.
Серные препараты.	Geo. Monro Ltd.
	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
	G. H. Richards Ltd.
<b>TETRACHLORETHANE</b>	W. J. Craven & Co. Ltd.
Tétrachloréthane.	Geo. Monro Ltd.
Tetracloretano.	Murphy Chemical Co. Ltd.
Tetrachloräthan.	Pan Britannica Industries Ltd.
Tetracloretano.	Plant Protection Ltd.
Тетра-хлор-этан.	G. H. Richards Ltd.

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

### (3) FUNGICIDES

The fungicides in this section are chiefly for the protection of plants against diseases caused by ectophytic fungi, i.e. diseases caused by fungus spores alighting on the outside of the plant. The fungicides used thus fall into two groups: (1) those which have a direct toxic action; and (2) those which exert a protective action over a period. Whilst the line of demarcation is not always clear, it may be said of these two great groups of fungicides that the sulphur preparations have a direct toxic action, and the copper preparations a protective action. It will also be noted that the section is again divided into two groups, products being available either for addition to water or as dusts for direct application. The choice of the method of application is governed purely by local considerations, such as the availability of water or of suitable machinery, and such other factors as the size of the plants to be treated and the area to be covered, and, in many instances, the cost of labour.

The uses of the copper compounds such as Bordeaux and Burgundy mixtures are too well known to need detailed description, but attention should be directed to the modern types of copper preparations. These include "ready mixed" Bordeaux and the dispersible forms of cuprous oxide and copper oxychloride, which entirely eliminate the cumbersome details of preparation, and give effective spray suspensions with certainty.

Under the sulphur group, lime sulphur and powdered sulphur also need no description or recommendation. Major advances have been made in the wettable and dispersible types of sulphur for wet application, and these products have the advantage of eliminating much of the foliage damage that may be caused by lime sulphur. Included in the sulphur group are sodium, potassium and ammonium polysulphides. These are not so widely used as lime sulphur and their only advantage is that they are compatible with soap. More recent introductions are the organic sulphur compounds such as tetramethylthiuram disulphide, a mild fungicide for use on sensitive foliage.

This section also includes the mercury compounds used for the treatment of bulbs and tubers. More detailed reference to seed dressings will be found under Section 6.

The list of fungicides is completed by the inclusion of the salicylanilide products, used chiefly as foliage fungicides for sensitive glasshouse crops, and the preparations containing zinc compounds.

<i>Products</i>	<i>Manufacturers</i>
<b>COPPER PREPARATIONS</b>	
Préparations Cupriques.	
Preparaciones de cobre.	
Kupfer Präparate.	
Preparações de cobre.	
Препараты меди.	
<b>Bordeaux Mixtures</b>	Acme Chemical Co.
Bouillies Bordelaises.	F. W. Berk & Co. Ltd.
Mezclas de Burdeos.	Buggé's Insecticides Ltd.
Bordeaux Mischungen.	W. J. Craven & Co. Ltd.
Misturas de Burdeos.	Hemingway & Co. Ltd.
Смеси Бордо.	

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>Bordeaux Mixtures (Cont.)</b>	
Bouillies Bordelaises.	May & Baker Ltd.
Mezclas de Burdeos.	Geo. Monro Ltd.
Bordeaux Mischungen.	Murphy Chemical Co. Ltd.
Misturas de Burdeos.	Pan Britannica Industries Ltd.
Смеси Бордо.	Plant Protection Ltd.
	G. H. Richards Ltd.
<b>Burgundy Mixtures</b>	
Bouillies Bourguignonnes.	Acme Chemical Co.
Mezclas de Borgoña.	Buggé's Insecticides Ltd.
Burgunder Mischungen.	W. J. Craven & Co. Ltd.
Misturas de Borgonha.	Geo. Monro Ltd.
Смеси Бургундии.	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
	G. H. Richards Ltd.
<b>Copper Fungicides (Dusts)</b>	
Poudres anti-cryptogamiques cupriques.	Acme Chemical Co.
Fungicidas de cobre (polvos).	F. W. Berk & Co. Ltd.
Kupfer Pilztödter (Pulver).	Buggé's Insecticides Ltd.
Fungicidas de cobre (pós).	Burt, Boulton & Haywood Ltd.
Медистые препараты для уничтожения грибов	W. J. Craven & Co. Ltd.
(пылеобразные).	Hemingway & Co. Ltd.
	Geo. Monro Ltd.
	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Pest Control Ltd.
	Plant Protection Ltd.
	Shell Chemicals Ltd.
<b>Copper Fungicides (Liquid Sprays)</b>	
Liquides pulvérisables anti-cryptogamiques cupriques.	Acme Chemical Co.
Fungicidas de cobre (líquido para rociar).	F. W. Berk & Co. Ltd.
Kupfer Pilztödter (flüssig zum Bespritzen).	Buggé's Insecticides Ltd.
Fungicidas de cobre (líquidos para pulverizar).	Burt, Boulton & Haywood Ltd.
Медистые препараты для уничтожения грибов	W. J. Craven & Co. Ltd.
(жидкость для опрыскивания).	Geo. Monro Ltd.
	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Pest Control Ltd.
	Plant Protection Ltd.
	Shell Chemicals Ltd.

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>RUBBER TREE TAPPING PANEL FUNGICIDES</b> Préparations anti-cryptogamiques pour surface de saignée des Hévéas. Fungicidas de Painel para Extracción de la Goma de los Arboles Caucheros. Pilztoedter zum Anzapfen von Gummibäumen. Fungicidas de painel para Operações da Extração da borracha dos Arvores Seringueiros. Препараты для уничтожения грибов на нарезках каучуконосных деревьев.	Buggé's Insecticides Ltd. Killgerm Co. Ltd. Newton Chambers & Co. Ltd.
<b>MERCURY PREPARATIONS</b> Préparations Mercurielles. Preparaciones a base de mercurio. Quecksilber Präparate. Preparações Mercuriais. Ртутные препараты.	
<b>Inorganic Mercury Dusts</b> Poudres à Mercurielles non-organiques. Polvos Inorgánicos de mercurio. Pulver von anorganischem Quecksilber. Pós inorganicos de mercurio. Неорганические ртутные пылеобразные вещества.	F. W. Berk & Co. Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. May & Baker Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>Organo-Mercury Bulb and Tuber Dips</b> Solutions organo-mercurielles pour oignons et tubercules. Baños Organo Mercuriales para Bulbos y Tubérculos. Tauchbäder für Zweibel und Wurzeln auf Basis von Organischen Quecksilber. Banhos Organo Mercuriais para Bulbos e Tubérculos. Органические ртутные соединения для очистки луковиц и клубней.	F. W. Berk & Co. Ltd. W. J. Craven & Co. Ltd. Lunevale Products Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>Organo-Mercury Liquid Sprays</b> Solutions organo-mercurielles pulvérisables. Líquidos Organo Mercuriales pulverizables. Flüssiges Organisches Quecksilber zum Bespritzen. Líquidos Organo Mercuriais para Pulverizar. Органические ртутные соединения для жидкого опрыскивания.	F. W. Berk & Co. Ltd. Lunevale Products Ltd.

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>Organo-Mercury Seed Dressings</b> Solutions organo-mercurielles pour l'apprêt de sémences. Aprestos Organo Mercuriales para Semillas. Organische Quecksilber Präparate für Saaten. Tratamentos Organo Mercuriales para Sementes. Органические ртутные соединения для обработки семян.	F. W. Berk & Co. Ltd. W. J. Craven & Co. Ltd. Lunevale Products Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>SALICYLANILIDE PREPARATIONS</b> Préparations à base de Salicylanilide. Preparaciones a base de Salicilanilida. Salicylanilid Präparate. Preparações a base de Salicilanilida. Салицил-анилидовые препараты.	Plant Protection Ltd. Shell Chemicals Ltd.
<b>SULPHUR PREPARATIONS</b> Préparations Soufrées. Preparaciones de azufre. Schwefel Präparate. Preparações de Enxofre. Серные препараты.	
<b>Lime Sulphur</b> Chaux soufrée. Azufre de Cal. Schwefelkalk. Enxofre de Cal. Серная известь.	Acme Chemical Co. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. G. H. Richards Ltd. Shell Chemicals Ltd.
<b>Potassium and Sodium Polysulphides</b> Polysulfures de soude et de Potasse. Polisulfuros de sodio y potasio. Kalium- und Natriumpolysulfide. Polisulfuros de Sódio e de Potássio. Полнеульфиды калия и натрия.	W. J. Craven & Co. Ltd. Plant Protection Ltd.



## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>Sulphur Fungicides (Dusts)</b> Poudres anti-cryptogamiques soufrées. Fungicidas de azufre (polvos). Schwefel Pilztödter (Pulver). Fungicidas de Enxofre (Pós). Серные препараты для уничтожения грибов (пылеобразные).	Acme Chemical Co. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>Sulphur Fungicides (Liquid Sprays, excluding Lime Sulphur)</b> Liquides pulvérisables anti-cryptogamiques soufrés (autre que chaux soufrées). Fungicidas de azufre (rociós líquidos, excluyendo azufre de cal). Schwefel Pilztödter (flüssig zum Spritzen, ausgenommen Schwefelkalk). Fungicidas de Enxofre (Líquidos para Pulverizar) excluyendo enxofre de cal). Серные препараты для уничтожения грибов (жидкости для опрыскивания, за исключением серной извести).	F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>Tetramethylthiuram Disulphide Preparations</b> Préparations à base de Bisulfure de Tétraméthylthiurée. Preparaciones de Disulfuro de Tetrametiltiuramo. Tetramethylthiuramdisulfid Präparate. Preparações de Disulfuro de Tetrametiltiuramo. Тетра-метил-тиурам-ди-сульфидные препараты.	Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>ZINC PREPARATIONS</b> Préparations à base de Zinc. Preparaciones de cinc. Zink Präparate. Preparações de Zinco. Препараты цинка.	W. J. Craven & Co. Ltd. Hemingway & Co. Ltd. Plant Protection Ltd.

### (4) INSECTICIDES

The effective use of insecticides depends upon the correct choice of chemical to kill the particular species of insect concerned, and the proper timing of its application to hit the most vulnerable stage of that insect without doing damage to the host plant.

Insecticides may broadly be divided into contact poisons, stomach poisons and fumigants. The first class kills, as the name implies, when it comes in contact with the body of the insect,

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

as exemplified by nicotine used against aphides. The second is usually applied to the surface of the plant on which the insect feeds and kills that insect after ingestion; lead arsenate is used to control codling moth. The third class, fumigants, is vaporised into closed spaces such as glasshouses, or into the atmosphere immediately surrounding insects, and kills the insect when inhaled; hydrogen cyanide fumigation kills citrus scales (see also Section 2).

Ovicides such as tar and petroleum washes are forms of contact poison designed to kill the vulnerable egg stage of some insects, and poison bait chemicals such as sodium arsenite constitute special applications of stomach poisons. Some chemicals may act in more than one way. Nicotine and the newer benzene hexachloride can act as contact and stomach poisons and as fumigants.

Of the contact insecticides, nicotine and nicotine sulphate have long been established for the control of aphides and many other soft-bodied pests. Nicotine is generally preferred in cool and temperate climates, the sulphate in hot countries. Derris and *Lonchocarpus* products containing rotenone also act primarily as contact poisons and have the advantage of being practically non-poisonous to mammals. Britain led the world in the development of rotenone insecticides. Pyrethrum is another extremely potent and very quick-acting contact poison. It is, however, much more used in domestic than agricultural insecticides and suffers from the disadvantage of being very easily decomposed on exposure.

Two phosphorous compounds, hexaethyl-tetra-phosphate (H.E.P.T.) and paranitrophenyl-diethyl-thiophosphate (E.605), discovered in Germany during the war, promise to find extended uses as contact insecticides.

The various arsenicals have been the standard stomach poisons for many years. Lead arsenate, available both as a paste and as a powder, and usually used as a spray suspension, has been the normal treatment for codling moth, but DDT preparations are finding widespread use. Lead arsenate is also used against a wide range of biting insects and their larvae, and as a soil poison to control such turf pests as earth worms and mole crickets. Calcium arsenate, applied as a dust, is the standard treatment against cotton boll worm and Colorado beetle. Sodium arsenite, being soluble in water, is unsuitable for application to plants but has been and is being used in very large quantities in baits. The less important fluorine compounds are also used as stomach poisons: sodium silicofluoride as a locust poison and to kill bagworm of wattle; cryolite for tobacco worm and barium silicofluoride to kill mole crickets.

Special mention must be made of the new insecticides based on DDT (dichloro-diphenyl-trichloroethane) and benzene hexachloride. Both have long been known as chemicals, but only in the past few years have their really outstanding insecticidal properties been revealed. DDT was discovered to be an insecticide in Switzerland and much publicised in the U.S., but a great deal of intensive development work on it has been done in Britain and the British Empire. Benzene hexachloride was discovered independently, but practically simultaneously, in Britain and France, but the elucidation of its complicated chemistry, including the isolation of its extremely active gamma form, and its practical development have been and are being completed in Britain.

Both DDT and benzene hexachloride are outstanding in that, at very low dosages, they are toxic to many insects, they are both very stable and act over long periods and both are very safe in use at all ordinary concentrations. DDT is rather more persistent, benzene hexachloride is quicker acting. Both are finding uses in the more efficient control of a wide range of caterpillar and beetle pests, but perhaps the outstanding uses at present are mosquito control by DDT and locust control by benzene hexachloride.

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Under fruit tree washes are grouped together tar oil washes, petroleum oil washes, tar-petroleum oil washes, dinitro-ortho-cresol in petroleum oil washes and thiocyanate in petroleum oil washes. These materials function mainly as ovicides and may be either of emulsion or miscible type. Some washes are applied in the dormant stage and others up to the mouse ear\* stage of the buds. They are used principally on fruit trees and bushes to destroy various pests which overwinter there.

The tar oil washes are usually applied to fruit trees diluted with water to various concentrations. Under Scandinavian conditions the emulsion type preparations are often applied up to the breaking stage of the buds. Tar oil washes are used principally for the control of aphides. Other pests which they control are apple sucker, pear psylla, several species of scale insects, winter moth, March moth, mottled umber moth, vapourer moth, ermine moths and the eye spotted bud moth. They are also used on fruit trees to kill moss and lichen.

The petroleum oil washes are not regarded as toxic to the eggs of aphides or apple sucker and are, therefore, generally used at concentrations of from 6 to 7½ per cent. at the breaking\* to mouse ear stages of the buds on trees or bushes which have previously been sprayed with a tar oil wash. Among the pests controlled by the petroleum oil washes are pear psylla, scale insects, winter moth, March moth, mottled umber moth, vapourer moth and fruit tree leaf roller. In addition, they are also toxic to the eggs of the fruit tree red spider, the apple capsid and the currant capsid, and it is for the control of these pests that they are most commonly used.

In addition to these washes for dormant or early spring use there is a big demand in certain parts of the world for highly refined petroleum oils. These are used principally on citrus trees for control of scale insects usually at concentrations of from 1 to 2 per cent. Oils of this type are also used for control of various species of red spider both outdoors and in glasshouses. Other uses are as wetting agents for nicotine or derris or as stickers for arsenate of lead. In most cases these oils are made up in the emulsion form, but in some cases miscible type preparations are also available.

Combined preparations incorporating derris, nicotine, thiocyanates and DDT with highly refined oils are also used for specialised purposes.

Tar-petroleum washes contain both tar and petroleum oil and may be of both miscible and emulsion types. They are recommended for use on dormant trees only and generally at a concentration of 10 per cent. They control all the pests controlled by a tar oil wash and, in addition, are used for the control of fruit tree red spider, apple capsid and currant capsid.

The dinitro-ortho-cresol in petroleum oil washes (DNC) control all the pests controlled by both the tar oil and petroleum oil washes. They have the advantage over the tar-petroleum washes in that they can be applied much later and, therefore, are more effective against capsid and red spider. They are of the emulsion type and are normally used at 6 to 8 per cent. concentration in the dormant stage but have also been used successfully in the breaking to the burst\* stages. In Palestine and the surrounding countries they are used successfully to stimulate bud development in the Spring. They are also used to destroy moss and lichen.

Quite recently azobenzene and dicyclohexylamine 2:4-dinitro-ortho-cyclohexylphanate have come to the fore as new means of control of red spider mites. The former is chiefly used in the form of smoke and spray aerosols for treatment of glasshouse crops, and the latter as sprays and dusts for control of fruit-tree red spider.

\* One of the stages in the development of fruit buds—see footnote on page 14.

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<i>Products</i>	<i>Manufacturers</i>
<b>ARSENICAL PREPARATIONS</b>	
Préparations Arsenicales. Preparaciones arsénicas. Arsen Präparate. Preparações arsénicas. Препараты мышьяка.	
<b>Calcium Arsenate</b> Arseniate de Chaux. Arseniato de Calcio. Arsensaures Calcium. Arseniato de Cálcio. Мышьяковистый кальций.	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Hemingway & Co. Ltd. Murphy Chemical Co. Ltd. Pest Control Ltd. Plant Protection Ltd.
<b>Lead Arsenate</b> Arseniate de Plomb. Arseniato de Plomo. Arsensaures Blei. Arseniato de chumbo. Мышьяковистый свинец.	Acme Chemical Co. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Hemingway & Co. Ltd. Lunevale Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd. Shell Chemicals Ltd.
<b>Paris Green</b> Vert de Paris. Verde Paris. Pariser Grün. Verde Paris. Парижская зелень.	Acme Chemical Co. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Hemingway & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>AZOBENZENE PREPARATIONS</b> Préparations d'Azobenzène. Preparados de Azoxibenceno. Azobenzol Präparate. Preparações de Azobenzina. Азотобензиновые препараты.	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>BARIUM SILICOFLUORIDE</b> (see under <b>Fluoride Preparations</b> )	
<b>BENZENE HEXACHLORIDE DUSTS</b> Poudre à l'Héxachlorure de Benzène. Polvos de Hexacloruro de bencina. Benzolhexachlorid Pulver. Pós de Hexacloruro de benzina. Гексахлоридный бензол (пылеобразный).	
	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd.
<b>BENZENE HEXACHLORIDE SMOKES</b> Fumées d'hexachlorure de benzène. Sahumerios de Hexacloruro de Benceno. Benzolhexachlorid Rauchmittel. Fumos de Hexacloruro de Benzina. Бензиновые гексахлоровые дымы.	
	Plant Protection Ltd.
<b>BENZENE HEXACHLORIDE SPRAYS</b> Pulvérisations à base d'Héxachlorure de Benzène. Rocios de Hexacloruro de bencina. Benzolhexachlorid flüssig zum Anspritzen. Líquidos para pulverizar de hexacloruro de benzina. Гексахлоридный бензол (жидкости для опрыскивания).	
	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>CALCIUM ARSENATE</b> (see under <b>Arsenical Preparations</b> )	
<b>CALOMEL DUST</b> Poudre à base de Calomel. Polvos de calomelano. Calomel Pulver. Pós de Calomelano. Пылеобразный каломель.	
	Acme Chemical Co. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. May & Baker Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>CUBÉ PREPARATIONS</b> (see under <b>Derris Preparations</b> )	

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<i>Products</i>	<i>Manufacturers</i>
<b>DDT PREPARATIONS</b> (see under <b>Dichloro-diphenyl-trichlorethane Preparations</b> )	
<b>DERRIS PREPARATIONS, including LONCHOCARPUS or CUBÉ PREPARATIONS</b>	
<b>Derris Dusts</b> Poudres á Derris. Polvos de Derris. Derris Pulver. Pós de Derris. Пылеобразные вещества Деррис.	Acme Chemical Co. Stafford Allen & Sons Ltd. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>Derris Powders for Wet Application</b> Poudres á Derris pour application liquide. Polvos de Derris para Aplicación líquida. Derris Pulver für feuchte Auflage. Pós de Derris para Aplicação líquida. Порошки Деррис для мокрых процессов.	Stafford Allen & Sons Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>Derris Extracts for Wet Application</b> Extrait de Derris pour application liquide. Extracto de Derris para Aplicación líquida. Derris Extract für feuchte Auflage. Extracto de Derris para Aplicação líquida. Зектракты Деррис для мокрых процессов.	Acme Chemical Co. Stafford Allen & Sons Ltd. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. Shell Chemicals Ltd.

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>DICHLORO-DIPHENYL-TRICHLORETHANE DUSTS</b> Poudres à Dichloro-Diphényl-Trichloréthanol. Polvos de Dinitro-Difenil-Tricloretano. Dichloro-Diphenyl-Trichlorethane Pulver. Pós de dicloro-difenil-tricloretano. Порошки-ди-хлоро-ди-фенил-три-хлор-этан.	Acme Chemical Co. Stafford Allen & Sons Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. Killgerm Co. Ltd. Lunevale Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. G. H. Richards Ltd. Shell Chemicals Ltd.
<b>DICHLORO-DIPHENYL-TRICHLORETHANE SMOKES</b> Fumées de trichloréthane diphénylique dichloré. Sahumerios de Dichloro-difenol-tricloretano. Dichlor-Diphenyl-Trichloräthan Rauchmittel. Fumos de Dicloro-difenil tricloretano. Двухлоро-двуфенило-трихлороретановые дымы.	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd.
<b>DICHLORO-DIPHENYL-TRICHLORETHANE LIQUID SPRAYS</b> Liquides pulvérisables à base de Dichloro-Diphényl-Trichloréthanol. Líquidos pulverizables de Dichloro-Difenil-Tricloretano. Dichloro-Diphenyl-Trichlorethan, flüssig zum Anspritzen. Líquidos para pulverizar de dicloro-difenil-tricloretano. Ди-хлоро-ди-фенил-три-хлор-этан (жидкости для опрыскивания).	Acme Chemical Co. Stafford Allen & Sons Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. Killgerm Co. Ltd. Lunevale Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. G. H. Richards Ltd. Shell Chemicals Ltd.
<b>DINITRO-CYCLO-HEXYL-PHENOL PREPARATIONS</b> Préparations à base de Dinitro-cyclo-héxyl-phénol. Preparaciones de Dinitro-ciclo-hexil-fenol. Dinitro-cyclo-hexyl-phenol Präparate. Preparações de dinitro-ciclo-hexil-fenol. Ди-нитро-цикло-гексил-феноловые препараты.	Buggé's Insecticides Ltd. Pan Britannica Industries Ltd. Pest Control Ltd.

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>DINITRO-ORTHO-CRESOL PREPARATIONS</b>	
Préparations à base de Dinitro-ortho-crésol.	Buggé's Insecticides Ltd.
Preparaciones de dinitro-orto-cresol.	Burt, Boulton & Haywood Ltd.
Dinitro-Ortho-Kresol Präparate.	W. J. Craven & Co. Ltd.
Preparações de dinitro-orto-cresol.	May & Baker Ltd.
Ди-нитро-орто-крезоловые препараты.	Geo. Monro Ltd.
	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Pest Control Ltd.
	Plant Protection Ltd.
	Shell Chemicals Ltd.
	Sir Thomas & Arthur Wardle Ltd.
<b>FLUORIDE PREPARATIONS</b>	
Préparations Fluorées.	
Preparaciones de Fluoruro.	
Fluorsalz Präparate.	
Preparações de Fluoruro.	
Препараты фтора.	
<b>Barium Silicofluoride Preparations</b>	
Préparations à base de Silicofluorure de Baryum.	Buggé's Insecticides Ltd.
Preparaciones de Silicofluoruro de bario.	W. J. Craven & Co. Ltd.
Barium-Silico-Fluorid Präparate.	Hemingway & Co. Ltd.
Preparações de silicofluoruro de bario.	Pan Britannica Industries Ltd.
Препараты кремне-фтористого бария.	Plant Protection Ltd.
<b>Cryolite Preparations</b>	
Préparations à base de Cryolithe.	W. J. Craven & Co. Ltd.
Preparaciones de criolita.	Pan Britannica Industries Ltd.
Kryolit Präparate.	
Preparações de criolita.	
Криолитовые препараты.	
<b>Sodium Silicofluoride Preparations</b>	
Préparations à base de Silicofluorure de Soude.	Acme Chemical Co.
Preparaciones de Silicofluoruro de sodio.	W. J. Craven & Co. Ltd.
Natrium-Silico-Fluorid Präparate.	Pan Britannica Industries Ltd.
Preparações de Silicofluoruro de sódio.	Plant Protection Ltd.
Препараты кремне-фтористого натрия.	
<b>HEXACHLOROCYCLOHEXANE PREPARATIONS</b> (see under <b>Benzene Hexachloride</b> )	
<b>LEAD ARSENATE</b> (see under <b>Arsenical Preparations</b> )	
<b>LIME SULPHUR</b> (see under <b>Fungicides</b> )	



## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>LONCHOCARPUS PREPARATIONS</b> (see under <b>Derris Preparations</b> )	
<b>NICOTINE AND NICOTINE PREPARATIONS</b> Nicotine et Préparations à base de Nicotine. Nicotina y Preparaciones de Nicotina. Nikotin und Nikotin Präparate. Nicotina e Preparações de Nicotina. Никотин и препараты никотина.	
<b>Nicotine Alkaloid</b> Nicotine (alcaloïde). Alcaloïde de Nicotina. Nikotin Alkaloid. Alcaloïde de Nicotina. Алкалоиды никотина.	Acme Chemical Co. British Nicotine Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd. Shell Chemicals Ltd.
<b>Nicotine Dusts</b> Poudres à base de Nicotine. Polvos de Nicotina. Nikotin Pulver. Pós de Nicotina. Никотиновые пылеобразные вещества.	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>Nicotine, Liquid Preparations</b> Préparations liquides à base de Nicotine. Preparaciones Líquidas de Nicotina. Nikotin flüssige Präparate. Preparações líquidas de Nicotina. жидкие препараты никотина.	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd. Shell Chemicals Ltd.

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>Nicotine Sulphate (40 per cent.)</b> Sulfate de Nicotine à 40%. Sulfato de Nicotina 40%. Nikotin Sulfat 40%. Sulfato de Nicotina 40%. Сульфат никотина, 40%.	British Nicotine Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>Nicotine and Sulphur Dusts</b> Poudres à base de Nicotine et de Soufre. Polvos de Azufre y Nicotina. Nikotin und Schwefel Pulver. Pós de enxofre e Nicotina. Пылеобразная смесь серы и никотина.	Acme Chemical Co. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>PETROLEUM OIL WASHES</b> Lessives à base d'Huile de Pétrole. Lavados de Aceita de Petroleo. Petroleumöl Waschlaugen. Lavados de Oleo de Petroleo. Промывки из нефтяного масла.	
<b>Dinitro-o-cresol Petroleum Washes (Emulsion Type for Dormant and Delayed Dormant Application)</b> Lessives à base de Pétrole Dinitro-o-crésol (type émulsif pour application avant la floraison et au moment de la floraison). Lavados de Petróleo de Dinitro-o-cresol (Tipo Emulsión para Aplicación Latente y Latente Demorada). Dinitro-o-Kresol Waschlaugen (Emulsionstyp für Verwendung solange der Baum nicht "im Saft" ist und bis zum Zeitpunkt der Bildung von Blattknospen). Lavados de Petroleo de Dinitro-o-cresol (Tipo Emulsão para Aplicação Latente e Latente Demorada). Ди-нитро-о-крезоловые нефтяные промывки (эмульсионного типа для применения перед расцветом почек или непосредственно перед расцветом почек).	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. May & Baker Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. Shell Chemicals Ltd.

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>Derris-Petroleum Oil Washes (Emulsion Type for Summer Application)</b> Lessives à base d'Huile de Derris et d'Huile de Pétrole (type émulsif pour application estivale). Lavados de Aceite de Petróleo-Derris (Tipo Emulsión para Aplicación Veraniega). Derris-Petroleumöl Waschlaugen (Emulsions-typ für Sommerverwendung). Lavados de Oleo de Petróleo-Derris (Tipo Emulsão para Aplicação no Verão). Промывки из нефтяного масла Деррис (эмульсионного типа для летнего применения).	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>Nicotine-Petroleum Oil Washes (Emulsion Type for Summer Application)</b> Lessives à base d'Huile de Pétrole-Nicotine (type émulsif pour application estivale). Lavados de Aceite de Petróleo Nicotina (Tipo Emulsión para Aplicación Latente y Latente Demorada). Nikotin-Petroleumöl Waschlaugen (Emulsionstyp für Sommerverwendung). Lavados de Oleo de Nicotina-Petroleo (Tipo Emulsão para Aplicação no Verão). Промывки из никотина и нефтяного масла (эмульсионного типа для летнего применения).	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd.
<b>Petroleum Oil Washes (Emulsion Type for Dormant and Delayed Dormant Application)</b> Lessives à base d'Huile de Pétrole (type émulsif pour application avant la floraison et au moment de la floraison). Lavados de Aceite de Petróleo (Tipo Emulsión para Aplicación Veraniega). Petroleumöl Waschlaugen (Emulsionstyp für Verwendung solange der Baum nicht "im Safte" ist und bis Zeitpunkt der Bildung von Blattknospen). Lavados de Oleo de Petroleo (Tipo Emulsão para Aplicação Latente e Latente Demorada). Промывки из нефтяного масла (эмульсионного типа для применения перед расцветом почек или непосредственно перед расцветом почек).	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. John Paterson & Co. Ltd. Plant Protection Ltd. Shell Chemicals Ltd.

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>Petroleum Oil Washes (Miscible for Dormant and Delayed Dormant Application)</b> Lessives à base d'Huile de Pétrole (type miscible pour application avant la floraison et au moment de la floraison). Lavados de Aceite de Petróleo (Tipo Mezclable para Aplicación Latente y Latente Demorada). Petroleumöl Waschlaugen (Mischbar für Verwendung solange der Baum nicht "im Saft" ist und bis zum Zeitpunkt der Bildung von Blattknospen). Lavados de Oleo de Petroleo (Tipo Mesclavel para Aplicação Latente e Latente Demorada). Промывки из нефтяного масла (смесительного типа для применения перед расцветом почек или непосредственно перед расцветом почек).	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Shell Chemicals Ltd.
<b>Petroleum Oil Washes (Emulsion Type for Summer Application)</b> Lessives à base d'Huile de Pétrole (type émulsif pour application estivale). Lavados de Aceite de Petróleo (Tipo Emulsión para Aplicación Veraniega). Petroleumöl Waschlaugen (Emulsionstyp für Sommerverwendung). Lavados de Oleo de Petroleo (Tipo Emulsão para Aplicação no Verão). Промывки из нефтяного масла (эмульсионного типа для летнего применения).	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. John Paterson & Co. Ltd. Pest Control Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>Petroleum Oil Washes (Miscible Type for Summer Application)</b> Lessives à base d'Huile de Pétrole (type miscible pour application estivale). Lavados de Aceite de Petróleo (Tipo Mezclable para Aplicación Veraniega). Petroleumöl Waschlaugen (Mischbarer Typ für Sommerverwendung). Lavados de Oleo de Petroleo (Tipo mesclavel para Aplicação no Verão). Промывки из нефтяного масла (смесительного типа для летнего применения).	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Pest Control Ltd.
<b>Petroleum-Tar Oil Washes (see under Tar-Petroleum Washes)</b>	

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>Thiocyanate in Petroleum Oil Washes</b> <b>(Emulsion Type)</b> Lessives à base de solution de Thiocyanate dans l'Huile de Pétrole (type émulsif). Tiocianato en Lavados de Aceite de Petróleo (Tipo Emulsión). Thiocyanat in Petroleumöl Waschlaugen (Emulsions-typ). Tiocianato en Lavados de Oleo de Petroleo (Tipo Emulsão). Промывки из тио-цианата с нефтью (эмульсионного типа).	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Murphy Chemical Co. Ltd. Plant Protection Ltd.
<b>Thiocyanate in Petroleum Oil Washes</b> <b>(Miscible Type)</b> Lessives à base de solution de Thiocyanate dans l'Huile de Pétrole (type miscible). Tiocianato en Lavados de Aceite de Petróleo (Tipo Mezclable). Thiocyanat in Petroleumöl Waschlaugen (Misch-barertyp). Tiocianato en Lavados de Oleo de Petroleo (Tipo Mesclavel). Промывки из тио-цианата с нефтью (смесительного типа).	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Murphy Chemical Co. Ltd. Plant Protection Ltd.
<b>PHOSPHORUS COMPOUNDS, including H.E.T.P.</b> <b>(Hexaethyl-tetra-phosphate and E.605 (para-nitrophenyl-diethyl-thiophosphate))</b> Composés de phosphore y compris H.E.T.P. (tétra-phosphat hexaéthylque) et E.605 (thiophosphat diéthylque paranitrophénylique). Compuestos Fosforosos incluyendo H.E.T.P. (Hexaetil-Tetra-Fosfato) y E.605 (Paranitrofenol-Dietil-Tiofosfato). Phosphorverbindungen einschliesslich von H.E.T.P. (Hexaäthyl-Tetraphosphat) und E.605 (Paranitrophenyl-Diäthyl-Thiophosphat). Compostos de Fósforo, incluindo H.E.T.P. (Hexaetil-tetra-fosfato) e E.605 (Paranitrofenil-dietil-tiofosfato). Фосфорные препараты включая г.е.т.п. (гексаэтил-тетра-фосфат и е.605) (пара-а-отофенил-двуетил-триофосфат).	Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Lunevale Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pest Control Ltd. Plant Protection Ltd.

## POTASSIUM AND SODIUM POLYSULPHIDES (see under Fungicides, Sulphur Preparations)

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>PYRETHRUM DUSTS</b> Poudres de Pyrèthre. Polvos de Píetro. Pyrethrum Pulver. Pós de Píetro. Порошки пиретрум.	Acme Chemical Co. Stafford Allen & Sons Ltd. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Shell Chemicals Ltd.
<b>PYRETHRUM EXTRACTS FOR WET APPLICATION</b> Extrait de Pyrèthre pour applications humides. Extracto de Píetro para Aplicación Húmeda. Pyrethrum Extract für Feuchten Gebrauch. Extracto de Píetro para Aplicação Úmida. Экстракты пиретрум для мокрых процессов.	Stafford Allen & Sons Ltd. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Shell Chemicals Ltd.
<b>QUASSIA PREPARATIONS</b> Préparations à base de Quassia. Preparaciones de Quasia. Quassia Präparate. Preparações de Quasia. Препараты из коры квасии.	Acme Chemical Co. Stafford Allen & Sons Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. G. H. Richards Ltd.
<b>ROTENONE PREPARATIONS</b> (see under <b>Derris Preparations</b> )	
<b>SULPHUR AND NICOTINE DUSTS</b> (see under <b>Nicotine and Sulphur Dusts</b> )	
<b>TAR OIL WASHES</b> Lessives à base d'Huile de Goudron. Lavados de Aceite de Alquitrán. Teeröl Waschlaugen. Lavados de Oleo de Alcatrão. Дегтярные промывки.	
<b>Tar Oil Washes (Emulsion Type for Dormant Application)</b> Lessives à base d'Huile de Goudron (type émulsif pour application avant la floraison). Lavados de Aceite de Alquitrán (Tipo Emulsión para Aplicación Latente). Teeröl Waschlaugen (Emulsionstyp für Verwendung, bevor die Knospe sich öffnet). Lavados de Oleo de Alcatrão (Tipo Emulsão para Aplicação Latente). Дегтярные промывки (эмульсионного типа для применения перед расцветом почек).	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. G. H. Richards Ltd. Shell Chemicals Ltd.

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>Tar Oil Washes (Miscible Type for Dormant Application)</b> Lessives à base d'Huile de Goudron (type miscible pour application avant la floraison). Lavados de Aceite de Alquitrán (Tipo Mezclable para Aplicación Latente). Teeröl Waschlaugen (Mischbarer Typ für Verwendung, solange der Baum nicht "im Saft" ist). Lavados de Oleo de Alcatrão (Tipo Mesclavel para Aplicação Latente). Дегтярные промывки (смесительного типа для применения перед расцветом почек).	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>Tar-Petroleum Oil Washes (Emulsion Type for Dormant Application)</b> Lessives à base de Goudron de Pétrole (type émulsif pour application avant la floraison). Lavados de Aceite de Petróleo-Alquitrán (Tipo Emulsión para Aplicación Latente). Teer- und Petroleumöl Waschlaugen (Emulsions-typ für Verwendung, solange der Baum nicht "im Saft" ist). Lavados de Oleo de Petróleo-Alcatrão (Tipo Emulsão para Aplicação Latente). Дегтярно-нефтяные промывки (эмульсионного типа для применения перед расцветом почек).	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>Tar-Petroleum Oil Washes (Miscible Type for Dormant Application)</b> Lessives à base de Goudron de Pétrole (type miscible pour application avant la floraison). Lavados de Aceite de Petróleo-Alquitrán (Tipo Mezclable para Aplicación Latente). Teer- und Petroleumöl Waschlaugen (Mischbarer Typ für Verwendung, solange der Baum nicht "im Saft" ist). Lavados de Oleo de Petróleo-Alcatrão (Tipo mesclavel para Aplicação Latente). Дегтярно-нефтяные промывки (смесительного типа для применения перед расцветом почек).	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd.

### THIOCYANATE-PETROLEUM OIL WASHES (see under **Petroleum Oil Washes**)

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

### (5) COMBINED INSECTICIDES AND FUNGICIDES

From the user's point of view it is obviously sound economics to cut down application costs by applying two products at the same time, and many attempts have been made to combine insecticidal and fungicidal ingredients in one product. The difficulties of achieving this are greater than would at first sight appear. Chemical incompatibility rules out many combinations, e.g., soap-based products and Bordeaux or lime sulphur. The fact that the optimum times of application for insecticides and fungicides rarely coincide, rules out many more.

In a few cases, however, satisfactory combined insecticides and fungicides can be prepared. Where regular dusting of hops with nicotine or nicotine-derris powders is carried out as a matter of routine to control hop damson aphid, it is convenient to use substantial quantities of sulphur in the carrier to reduce hop mould. Spring applications of lead or calcium arsenates for general caterpillar control can also be made in combination with lime sulphur for the control of apple scab. As a logical development from this practice combined products containing arsenates and sulphur, or arsenates and organo-mercury, have been formulated.

<i>Products</i>	<i>Manufacturers</i>
<b>ARSENATE AND SULPHUR DUSTS</b>	
Poudres à base d'Arséniate et de Soufre.	Acme Chemical Co.
Polvos de Azufre y Arseniato.	Bugge's Insecticides Ltd.
Arsen- und Schwefel Pulver.	W. J. Craven & Co. Ltd.
Pós de Enxofre e Arseniato.	Murphy Chemical Co. Ltd.
Мышьяковистые и серные пылеобразные вещества.	Pan Britannica Industries Ltd.
<b>DERRIS-NICOTINE-SULPHUR DUSTS</b>	
Poudres à base de Derris, Nicotine et Soufre.	Acme Chemical Co.
Polvos de Azufre, Nicotina y Derris.	F. W. Berk & Co. Ltd.
Derris, Nikotin und Schwefel Pulver.	Bugge's Insecticides Ltd.
Pós de Enxofre, Nicotina e Derris.	Burt, Boulton & Haywood Ltd.
Пылеобразные вещества Деррис, никотиновые и серные.	W. J. Craven & Co. Ltd.
	Geo. Monro Ltd.
	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Pest Control Ltd.
	Plant Protection Ltd.
<b>LEAD ARSENATE-ORGANO-MERCURY COMPOUND</b>	
Composé à base d'Arséniate de Plomb et de Mercure Organique.	Lunevale Products Ltd.
Arseniato de Plomo/Compuesto Organo Mercurial.	
Verbindung von arsensaurem Blei und organischen Quecksilber.	
Arseniato de Chumbo/Composto Organo Mercurial.	
Смесь мышьяковистого свинца и органических ртутных соединений.	
<b>NICOTINE-SULPHUR DUSTS</b>	
(see under <b>Insecticides</b> )	



## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

### (6) SEED DRESSINGS AND SEED DISINFECTANTS

The products in this section fall into two categories, namely, the seed disinfectants which are used to control diseases carried on the seeds, and the seed protectants which are used to control the attacks of fungi and insects in the soil.

The organo-mercury preparations are the most important of the seed disinfectants and they are generally used in the form of dusts which are applied to the seed in extremely low dosages, immediately or some time before sowing. In every country in the world seeds of wheat, oats, barley, rye, corn (maize), millet, sorghum and sugar beet are treated this way. The chief advantage of the organo-mercury compounds is that not only do they control the purely superficial diseases like the smuts, but they also control the more deep-seated diseases such as leaf stripe of oats and barley. Furthermore, they provide a considerable measure of protection against soil-borne diseases, and especially under conditions which are adverse to germination, they prevent emergence losses caused by the attacks of soil-borne fungi on the reserves of plant food in the seed. Thus, the practical effect is to give quicker emergence and a better stand. No seed dressing of this type, however, will control the very deep-seated diseases, like the loose smut of wheat and barley.

Copper preparations for the control of superficial diseases are also widely used, and a more recent development is the use of cuprous oxide as a seed protectant, particularly for use on vegetable seeds. Its chief use is for the control of "damping off" diseases, where the high copper content is an advantage.

Powdered sulphur is also occasionally used for seed treatment. It has been found useful in tropical countries, and when applied immediately after harvest affords a measure of protection against insect pests.

<i>Products</i>	<i>Manufacturers</i>
<b>COPPER PREPARATIONS</b>	
Préparations Cupriques.	F. W. Berk & Co. Ltd.
Preparaciones de Cobre.	Buggé's Insecticides Ltd.
Kupfer Präparate.	W. J. Craven & Co. Ltd.
Preparações de cobre.	Hemingway & Co. Ltd.
Препараты меди.	Plant Protection Ltd.
<b>ORGANO-MERCURY PREPARATIONS</b>	
Préparations à base de Mercure Organique.	F. W. Berk & Co. Ltd.
Preparaciones Organo Mercuriales.	Lunevale Products Ltd.
Präparate von organischem Quecksilber.	Pan Britannica Industries Ltd.
Preparações Organo Mercuriaes.	Plant Protection Ltd.
Органические ртутные препараты.	
<b>SULPHUR PREPARATIONS</b>	
Préparations Soufrées.	F. W. Berk & Co. Ltd.
Preparaciones de Azufre.	W. J. Craven & Co. Ltd.
Schwefel Präparate.	
Preparações de Enxofre.	
Препараты серы.	

### TETRAMETHYLTHIURAM DISULPHIDE

(see under **Fungicides, Sulphur Preparations**)

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

### (7) SOIL STERILISERS

"Soil steriliser" is a convenient but inexact term used to describe chemicals other than fertilisers which are added to the soil to improve plant growth. Their chief uses are for the treatment of soils in glasshouses and frames prior to planting out, and for the treatment of loam in the preparation of seedling and potting composts.

Soil sterilisers in general comprise bactericides, fungicides, insecticides, helminthicides and herbicides. The choice of the product to be used should depend on the purpose for which it is required. For example, formaldehyde is an excellent fungicide but has little insecticidal value, whilst the tar-acid preparations are more potent insecticides and herbicides.

The choice of the steriliser also depends upon whether a volatile or non-volatile product is required. The volatile products include carbon disulphide, chlorpicrin and, in some measure, formaldehyde.

In the case of the non-volatile sterilisers it is important that the product shall do its work and then decompose in the soil sufficiently rapidly not to interfere with plant growth, and when these conditions are achieved there is an increase in the fertility of the soil. Although this increase in fertility has not yet been fully explained it is sufficiently important to make soil sterilisation a routine practice, even when the control of obvious pests and diseases is considered unnecessary.

<i>Products</i>	<i>Manufacturers</i>
<b>CARBON DISULPHIDE</b> (see under <b>Fumigants</b> )	
<b>COPPER PREPARATIONS</b>	
(including <b>CHESHUNT COMPOUND</b> )	F. W. Berk & Co. Ltd.
Préparations Cupriques (y compris le composé de Cheshunt).	Buggé's Insecticides Ltd.
Preparaciones de Cobre (incluyendo Compuesto Cheshunt).	W. J. Craven & Co. Ltd.
Kupfer Präparate (einschliesslich Cheshunt-Verbindung).	Geo. Monro Ltd.
Preparações de Cobre (incluindo Composto Cheshunt).	Murphy Chemical Co. Ltd.
Препараты меди (включая смесь Чешент).	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
	G. H. Richards Ltd.
<b>CRESYLIC ACID PREPARATIONS</b>	
(see under <b>Tar Acid Preparations</b> )	
<b>DICHLOROBENZENE</b>	
Dichlorobenzène.	Buggé's Insecticides Ltd.
Diclorobencina.	W. J. Craven & Co. Ltd.
Dichlorobenzol.	Pan Britannica Industries Ltd.
Diclorobenzina.	Plant Protection Ltd.
Ди-хлоро-бензол.	

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>FORMALDEHYDE</b> Formaldéhyde. Formaldehido. Formaldehyd. Formaldehido. Формальдегид.	Acme Chemical Co. Ltd. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>METHALLYL CHLORIDE</b> Méthyl Chloré. Cloruro Metalfílico. Methallyl Chlorid. Cloruro Metalílico. Хлоридный металил.	Shell Chemicals Ltd.
<b>NAPHTHALENE</b> (see under <b>Fumigants</b> )	
<b>TAR ACID PREPARATIONS</b> Préparations à base d'Acide Phénique. Preparaciones de Acido de Alquitrán. Teersäure Präparate. Preparações de Acido de Alcatrão. Кислотные дегтярные препараты.	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Killgerm Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Newton Chambers & Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.

### (8) WEEDKILLERS

Weedkillers may be divided into two classes, those that kill all vegetation and are suitable for railways, roads and paths, and selective weedkillers which differentiate between different types of plant and may be used to kill out undesirable species without harm to the growing crop.

Members of the A.B.I.M. supply a wide range of general weedkillers based on the arsenicals, the chlorates and on phenolic compounds.

Among the second class are sulphuric acid which kills many weeds without damaging the cereals containing them, but which is not very suitable for export; dinitro-ortho-cresol selective weedkillers; and similar products based on copper compounds.

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

Within the last few years, however, an outstanding and purely British discovery has been the hormone selective weedkillers. It has been known for some years that minute amounts of plant hormones or growth substances may be used to induce rooting of difficult cuttings, to prevent premature fruit drop and to induce production of seedless fruits. More recently, however, those same chemicals, at extremely low dosages, have been found to kill a large number of deleterious weeds in cereals and grassland, without damage to crop plants. They have the advantages of being non-poisonous, non-inflammable and completely non-corrosive, and they open up a most important new field in weed suppression.

<i>Products</i>	<i>Manufacturers</i>
<b>ARSENICAL PREPARATIONS</b>	
Préparations Arsenicales.	Acme Chemical Co.
Preparaciones arsénicas.	Buggé's Insecticides Ltd.
Arsenhaltige Präparate.	W. J. Craven & Co. Ltd.
Preparações arsénicas.	Hemingway & Co. Ltd.
Препараты мышьяка.	Killgerm Co. Ltd.
	Lunevale Products Ltd.
	Geo. Monro Ltd.
	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
	G. H. Richards Ltd.
<b>CARBOLIC PREPARATIONS</b> (see under <b>Tar Acid Preparations</b> )	
<b>COPPER COMPOUNDS</b>	
Composés cupriques.	Buggé's Insecticides Ltd.
Compuestos de Cobre.	W. J. Craven & Co. Ltd.
Kupferverbindungen.	Geo. Monro Ltd.
Compostos de Cobre.	Pan Britannica Industries Ltd.
Соединения меди.	Plant Protection Ltd.
<b>CHLORATE PREPARATIONS</b>	
Préparations Chloratées.	Acme Chemical Co.
Preparaciones de Clorato.	Buggé's Insecticide Ltd.
Chlorat Präparate.	W. J. Craven & Co. Ltd.
Preparações de clorato.	Geo. Monro Ltd.
Хлорокислые препараты.	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
	G. H. Richards Ltd.

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<i>Products</i>	<i>Manufacturers</i>
<b>DINITRO-ORTHO-CRESOL</b> Dinitro-ortho-crésol. Dinitro-orto-cresol. Dinitro-Ortho-Kresol. Dinitro-orto-cresol. Ди-нитро-орто-крезол.	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Shell Chemicals Ltd. Sir Thomas & Arthur Wardle Ltd.
<b>HORMONE SELECTIVE WEEDKILLERS</b> Herbicides selectifs hormonaux. Destruutores de Hierbas Nocivas Selectivos de Hormonas. Hormone Präparate gegen Spezielles Unkraut. Destruutores de Hervas Nocivas Seletivos de Hormones. Гормоны для селективного уничтожения сорняков.	Buggé's Insecticides Ltd. Pest Control Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>LAWN SAND</b> Sable spécial pour gazon. Arena de prados. Rasensand. Areia de gramados. Песок для травяных насаждений.	Acme Chemical Co. F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. International Toxin Products Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>SULPHURIC ACID</b> Acide Sulfurique. Acido Sulfúrico. Schwefelsäure. Acido Sulfurico. Серная кислота.	F. W. Berk & Co. Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Plant Protection Ltd.

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<i>Products</i>	<i>Manufacturers</i>
<b>TAR ACID PREPARATIONS</b>	
Préparations à base d'Acide Phénique.	Buggé's Insecticides Ltd.
Preparaciones de Acido de Alquitrán.	Burt, Boulton & Haywood Ltd.
Teersäure Präparate.	W. J. Craven & Co. Ltd.
Preparações de Acido de Alcatrão.	Killgerm Co. Ltd.
Кислотные дегтярные препараты.	Geo. Monro Ltd.
	Murphy Chemical Co. Ltd.
	Newton Chambers & Co. Ltd.
	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
<b>THIOCYANATE PREPARATIONS</b>	
Préparations à base de Thiocyanate.	F. W. Berk & Co. Ltd.
Preparaciones de Tiocianato.	W. J. Craven & Co. Ltd.
Thiocyanat Präparate.	
Preparações de Tiocianato.	
Тио-цианокислые препараты.	

### (9) WETTERS, SPREADERS AND STICKERS

Auxiliary spray materials which promote contact between spray and sprayed surface are known as wetters and spreaders, and there is little distinction in practice between the two terms. In fact, it is often desirable that a spray should wet a waxy, water-repellent surface, such as that of a leaf or fruit, spread over the surface and penetrate into a fungus growth on the leaf or fruit. An efficient spray auxiliary will assist all three processes.

Wetters and spreaders, in general, have a characteristic molecular structure, possessing a dual character, in that part of the molecule is attracted to oils and waxes, part to water. In use, therefore, the molecules of the spreader act as bonds between the aqueous spray and the water-repellent plant surface and thus facilitate wetting and spreading. Soaps, "sulphonated" oils and alcohols, the naphthalene sulphonates, the saponines and sulphite lye, the latter a waste product of the treatment of wood pulp by the sodium sulphite process, are typical spreader materials. Soaps have the disadvantage that since they form insoluble compounds with lime and most metals, they are precipitated as a curd by hard water and by important spray materials such as lead arsenate, lime sulphur and Bordeaux Mixture. Other spreaders, and in particular the so-called sulphonated alcohols (sodium alkyl sulphates), mix freely with all spray materials and do not give a precipitate. Casein is one of the oldest spreaders in use and, although insoluble in water, it is readily dispersible in alkaline solutions. Similarly, oils when emulsified function as highly efficient spreaders and carriers of insecticides. Emulsified cottonseed oil has been used with nicotine and pyrethrum; petroleum white oil emulsions are commonly used on citrus crops and are especially valuable for the control of the water-repellent scale insects which so often infest citrus.

The term "sticker" is self-explanatory. Most fungicides are required to form a protective layer upon foliage and fruit, and this layer should be as tenacious and persistent as possible. Similarly, the insecticides lead arsenate and DDT may be required to persist as a thin layer on leaf, fruit and wood. In these cases a sticker is often advantageous although the common fungicides, Bordeaux Mixture and lime sulphur, have marked inherent tenacity. Glue, casein, oils, flour (wheat and soya bean) and gelatin are all in use as stickers.

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It is evident that a water-soluble spreader, although it enables a spray to wet the surface of leaf and insect, may affect adversely the tenacity of the deposit when this is exposed to rain. In practice, it is found that with materials such as lime sulphur and lead arsenate small quantities of a spreader are helpful in that they promote the formation of a thin, evenly spread film over the surface to be protected. In the case of contact insecticides, such as nicotine, however, relatively large quantities of wetter are often advantageous.

<i>Products</i>	<i>Manufacturers</i>
<b>CASEINATE PREPARATIONS</b> Préparations à base de Caseinate. Preparaciones de caseinato. Casein Präparate. Preparações de caseinato. Казеинокислые препараты.	Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co.
<b>GLUE PREPARATIONS</b> Préparations à base de Glu Preparaciones de Cola. Leim Präparate. Preparações de Cola Forte. Клейкие препараты.	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd.
<b>SAPONIN PREPARATIONS</b> Préparations à base de Saponine. Preparaciones de Saponina. Saponin Präparate. Preparações de Saponin. Омыляющие препараты.	W. J. Craven & Co. Ltd. Geo. Monro Ltd.
<b>SOFT SOAP</b> Savons doux. Jabones Verdes. Grüne Seife. Savões verdes. Мягкие мыла.	Acme Chemical Co. Buggé's Insecticides Ltd. Burt, Boulton & Haywood Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>SULPHONATED WETTING AGENTS</b> Agents Humidifiants Sulfonés. Agentes Humecedores Sulfonatados. Sulfurierte Feuchtmittel. Agentes Umídecetes Sulfonatados. Сульфоновислые увлажняющие вещества.	F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Lunevale Products Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. Shell Chemicals Ltd.

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<i>Products</i>	<i>Manufacturers</i>
<b>WHITE OILS</b>	Acme Chemical Co.
Huiles Blanches.	Buggé's Insecticides Ltd.
Aceites Blancos.	W. J. Craven & Co. Ltd.
Weisse Öle.	Killgerm Co. Ltd.
Oleos Brancos.	Geo. Monro Ltd.
Белые масла.	Murphy Chemical Co. Ltd.
	Pan Britannica Industries Ltd.
	Plant Protection Ltd.
	Shell Chemicals Ltd.

### (10) POISON BAIT'S

These have already been mentioned as special examples of stomach poisons under the general heading of insecticides. For many years the chief method of control of locusts, and grasshoppers, has been to scatter in front of the advancing edge of a swarm of hoppers or settled adults a moist bran or other bait material containing 3 to 5 per cent. of sodium arsenite or sodium silicofluoride. More recently the gamma form of benzene hexachloride has been found to be very much more effective and at the concentrations used is absolutely innocuous to man and animals.

Bait methods are also used for the control of ants and fruit flies, the product usually being sodium arsenite and thallium compounds in a sugar base. With ants, small quantities of the bait are placed on leaves or in special containers where the ants are working. For fruit flies the bait may be placed in glass vessels which are hung on the trees, or it may be "rained on" the foliage as a coarse spray.

Slugs and snails constitute a menace to many crops and are killed by baiting with bran plus an arsenical, a copper preparation, or, more recently, metaldehyde. The last is both attractive and toxic to most species.

<i>Products</i>	<i>Manufacturers</i>
<b>ANT DUSTS AND BAIT'S</b>	Acme Chemical Co.
Poudres Fourmicides et Appâts.	F. W. Berk & Co. Ltd.
Polvos y Cebos contra Hormigas.	W. J. Craven & Co. Ltd.
Ameisenstaub und Köder.	Geo. Monro Ltd.
Pós e Cevados contra Formigas.	Murphy Chemical Co. Ltd.
Приманки для муравьев и порошки для их уничтожения.	Pan Britannica Industries Ltd.
	Plant Protection Ltd.

**FRUIT FLY POISON BAIT'S**  
 Appâts empoisonnés contre la mouche du fruit.  
 Cebos Venenosos contra Moscas de la Fruta.  
 Giftköder gegen Obstfliegen.  
 Cevados Venenosos contra Moscas da Fruta.  
 Отравленные приманки для дрозофил.

Plant Protection Ltd.



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<i>Products</i>	<i>Manufacturers</i>
<b>LOCUST POISON AND GRASSHOPPER BAITs</b> Poison contre les criquets et appâts à sauterelles. Cebos contra Ortópteros y Venenos contra la Langosta. Giftködér gegen Heuschrecken und Grashüpfer. Cevados contra Ortópteros e Venenos contra a Locusta. Отравы для саранчи и приманки для кузнечиков.	Acme Chemical Co. W. J. Craven & Co. Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>SLUG BAITs</b> Appâts à Limaces. Cebos contra las Babosas. Köder für Schnecken. Cevados contra o Caracol. Приманки для улиток.	
<b>Arsenical Preparations</b> Préparations Arsénicales. Preparaciones Arsénicas. Arsenik Präparate. Preparações Arsénicas. Препараты мышьяка.	Acme Chemical Co. W. J. Craven & Co. Ltd. Hemingway & Co. Ltd. Plant Protection Ltd.
<b>Copper Preparations</b> Préparations cupriques. Preparaciones de Cobre. Kupfer Präparate. Preparações de Cobre. Препараты меди.	Acme Chemical Co. W. J. Craven & Co. Ltd. Hemingway & Co. Ltd. Geo. Monro Ltd.
<b>Metaldehyde Preparations</b> Préparations à base de Métaldéhyde. Preparaciones Metaldehídicas. Metaldehyd Präparate. Preparações Metaldehídicas. Препараты метальдегида.	Acme Chemical Co. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Murphy Chemical Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.

### (11) MISCELLANEOUS

#### Tree Wound Paints

Infection by fungi and bacteria can occur quite readily when a tree limb breaks, or a pruning cut is made, and the protective bark is thereby disturbed. The wound heals readily in a healthy tree, but risk of infection is greatly reduced by treating the exposed surface with a suitable paint. Good white lead paint is often recommended, but there are a number of specially prepared wound dressings.

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### Emulsifiers

Spray oils are normally applied in a diluted form, water being used as the carrier of the oil. When a mixture of oil and water is shaken vigorously, the oil breaks up into small globules but these rapidly coalesce on standing, re-forming separate layers of oil and water. This coalescence can be prevented by the use of suitable emulsifiers, which form a protective layer around each oil droplet and enable a permanent dispersion of oil in water, an emulsion, to be obtained.

In spray practice, oils are sold in a concentrated form, already prepared with emulsifiers and capable of being diluted with water to any required extent. Paste type emulsions (stock emulsions, mayonnaises) are thick “creams” and commonly contain casein with alkali as an emulsifying agent. More fluid, or “flowable” stock emulsions are now being developed. Miscible (“soluble”) oils contain oil-soluble emulsifiers, and are usually clear or only slightly opaque; they mix readily with water and then form the characteristic opaque, white emulsion. A wide variety of emulsifiers is available. In fact, many of the materials listed in the introduction to Section 9 as wetters and spreaders can function as emulsifying agents, since by virtue of their molecular structure they collect at the interface between the oil droplets and the water, and thus prevent coalescence of the droplets. In addition, materials such as bentonite clay, Bordeaux mixture, liquid rosin and blood albumen can function as emulsifiers, again by their ability to form a coating on the oil globule, and there are many highly efficient synthetic emulsifying agents.

### Rodent Repellents

It is often necessary to protect young fruit trees from rabbits and other rodents, which gnaw the bark and may completely “ring” the tree and thereby kill it. Effective proprietary preparations are available.

### Plant Growth-regulating Substances (Plant “Hormones”)

The term “hormone” should properly be applied to internal secretions which affect the growth, development and reproduction of the animal, but it is often used rather loosely in connection with synthetic chemicals which, even in very low concentrations of the order of a few parts per million, are capable of effecting profound changes in plants. The main uses to which plant growth substances are put are (1) the promotion of rooting; (2) the prevention of pre-harvest drop of fruit; (3) the production of fruit “set”; (4) selective weed-killing.

1. *Rooting Compounds.* Effective preparations are now available which will increase the possibility of rooting cuttings very considerably, and also speed up the process. Beta-indolyl-acetic acid, beta-indolyl-butyric acid, alpha-naphthalyl-acetic acid have all been used, together with the sodium salt and other derivatives of those acids. The cuttings are steeped for some hours in a very dilute solution or suspension of the chemical and then planted out in the normal way.

2. *Pre-harvest Drop.* It is well known that many varieties of apples and pears drop very freely from the tree when approaching maturity. The apple, Worcester Pearmain, and the pear, Conference, both very important English commercial varieties, are often picked before they are really ripe, so that weight, colour and flavour all suffer. Plant growth substances, of which the best-known is alpha-naphthalyl-acetic acid, when sprayed on to the fruit about a week before pre-harvest drop would normally occur, will induce the fruit to remain firmly held by its stalk to the spur for a further period of about three weeks. The process has the further advantage of lengthening the harvest period.

3. *Fruit-set.* The use of plant growth substances for the promotion of fruit set and the production of parthenocarpic fruit is an important new development. The chief crop affected

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to date is the tomato, but the process is likely to be used with those varieties which do not set very readily. In the case of tomato, fruit-set preparations are sprayed upon the bloom trusses when the last flower of the truss has just opened. Even if pollination has been inadequate, a complete set of fruit is obtained. The tomatoes, in the absence of pollination, will be seedless, but otherwise normal. The operation is particularly valuable when pollination is likely to be poor, as in early spring and late autumn under glass.

<i>Products</i>	<i>Manufacturers</i>
<b>EMULSIFIERS</b> Emulsionnants. Emulsificantes. Emulgierer. Emulsificantes. Эмульсеры.	F. W. Berk & Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>RODENT REPELLENTS</b> Produits pour éloigner les Rongeurs. Repelentes de Roedores. Abwehrmittel gegen Nagetieren. Repelentes de Roedores. Препараты отгоняющие грызунов.	Acme Chemical Co. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd.
<b>SYNTHETIC HORMONES</b> Hormones Synthétiques. Hormonas Sintéticas. Synthetische Hormone. Hormones Sintéticos. Синтетические гормоны.	
<b>Fruit Set Preparations</b> Préparations pour fixer les fruits. Preparaciones para sentar la Fruta. Präparate für Obstpflanzen. Preparações para fixar a Fruta. Препараты для стабилизации фруктов.	Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Lunevale Products Ltd. May & Baker Ltd. Plant Protection Ltd. Shell Chemicals Ltd.
<b>Preparations to Prevent Fruit Drop</b> Préparations contre la coulée des fruits. Preparaciones para Evitar la Caída de la Fruta. Präparate zur Vorbeugung von Obstfallen. Preparações para evitar a caída da Fruta. Препараты против падения фруктов.	Buggé's Insecticides Ltd. May & Baker Ltd. Geo. Monro Ltd. Pest Control Ltd. Plant Protection Ltd. Shell Chemicals Ltd.

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<i>Products</i>	<i>Manufacturers</i>
<b>Rooting Compounds</b>	Buggé's Insecticides Ltd.
Préparations pour le traitement des racines.	W. J. Craven & Co. Ltd.
Compuestos para Raíces.	May & Baker Ltd.
Verbindungen für Jäten.	Geo. Monro Ltd.
Compostos para raízes.	Plant Protection Ltd.
Составы для корней.	
<hr/>	
<b>TREE WOUND PAINTS</b>	Buggé's Insecticides Ltd.
Mastics pour Arbres.	Burt, Boulton & Haywood Ltd.
Pinturas para Heridas de Árboles.	W. J. Craven & Co. Ltd.
Anstriche für Baumwunden.	Lunevale Products Ltd.
Pinturas para Feridas de Arvores.	Geo. Monro Ltd.
Замазки для деревьев.	

### (12) APPLICATORS

The A.B.I.M., and this Directory, deal primarily with chemicals for the control of insects, fungi, weeds and other pests. It should be emphasised, however, that the best pest control products in the world are relatively useless unless applied by means of efficient machines. It is inevitable, therefore, that members of the A.B.I.M. should have studied this question in considerable detail. They supply suitable machines for many purposes, and can advise growers on the best equipment to meet their needs.

In a number of instances members have developed special apparatus for particular purposes. Of established machines, mention may be made of special dusters for applying clouds of sulphur to control oidium in rubber plantations. Among new machines, one of our members has recently developed a new spraying technique whereby ground crops such as potatoes may be efficiently sprayed, retaining all the advantages of spraying as compared with dusting, but using only one-tenth the normal amount of water per unit of area sprayed.

<i>Products</i>	<i>Manufacturers</i>
<b>ATOMISING MACHINES</b>	Buggé's Insecticides Ltd.
Appareils à Atomiser.	W. J. Craven & Co. Ltd.
Máquinas atomizadoras.	Geo. Monro Ltd.
Zerstäuber Maschinen.	Newton Chambers & Co. Ltd.
Máquinas Atomizadoras.	Pan Britannica Industries Ltd.
Распылители	Pest Control Ltd.
	Plant Protection Ltd.
	Shell Chemicals Ltd.

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>DUSTING MACHINES</b> Pulvérisateurs. Máquinas de Espolvorear. Zerstäuber Maschinen. Máquinas para Polvilhar. Пульверизаторы	Acme Chemical Co. Ltd. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. Plant Protection Ltd. G. H. Richards Ltd.
<b>FUMIGATORS</b> Fumigateurs. Fumigadores. Ausräucher. Fumigadores. Аппараты для окуливания.	Geo. Monro Ltd. Pan Britannica Industries Ltd. Pest Control Ltd. G. H. Richards Ltd.
<b>FOOT PUMPS FOR INJECTING CYANIDE INTO BURROWS</b> Pompes à pied pour injection de cyanure dans les terriers. Bombas de pié para injectar cianuro dentro de concheiras. Fusspumpen zur Einspritzung von Cyanid in Furchen. Bombas de pé para injectar cianuro nas coelheiras. Педальные насосы для впрыскивания циановых соединений в норы.	Geo. Monro Ltd. Plant Protection Ltd.
<b>HAND-SPRAYING MACHINES</b> Appareils à pulvériser à main. Máquinas de Pulverizar a Mano. Handgetriebene Zerstäuber Maschinen. Máquinas de pulverizar a mão. Ручные аппараты для опрыскивания.	Acme Chemical Co. Buggé's Insecticides Ltd. W. J. Craven & Co. Ltd. Geo. Monro Ltd. Newton Chambers & Co. Ltd. Pan Britannica Industries Ltd. Plant Protection Ltd. G. H. Richards Ltd.

## DIRECTORY OF PRODUCTS AND SERVICES.—Section II

<i>Products</i>	<i>Manufacturers</i>
<b>HIGH-PRESSURE POWER-DRIVEN SPRAYING MACHINES</b>	Buggé's Insecticides Ltd.
Appareils à pulvériser à haute pression (à moteur).	W. J. Craven & Co. Ltd.
Máquinas de Pulverizar de Alta Presión impulsadas a motor.	Geo. Monro Ltd.
Zerstäuber Maschinen, von Hochdruckkraft angetrieben.	Pan Britannica Industries Ltd.
Máquinas de pulverizar de Alta Pressão impulsadas com motor.	Pest Control Ltd.
Опрыскивающие аппараты высокого давления с механическим приводом.	Plant Protection Ltd.
<b>HOT WATER TREATMENT APPARATUS</b>	Geo. Monro Ltd.
Appareils pour le traitement à l'eau chaude.	
Aparatos para tratamientos con agua caliente.	
Apparate für Heisswasserbehandlung.	
Aparelhos para tratamentos com agua quente.	
Аппараты для очистки горячей водой.	
<b>KNAPSACK SPRAYERS</b>	Buggé's Insecticides Ltd.
Pulvérisateurs à dos.	W. J. Craven & Co. Ltd.
Pulverizadores de Mochila.	Geo. Monro Ltd.
Tornister Zerstäuber.	Newton Chambers & Co. Ltd.
Pulverizadores de mochila.	Pan Britannica Industries Ltd.
Ранцевые аппараты для опрыскивания.	Plant Protection Ltd.
	G. H. Richards Ltd.
<b>ORCHARD HEATERS</b>	Buggé's Insecticides Ltd.
Réchauffeurs de Vergers.	Geo. Monro Ltd.
Calentadores de Huertas.	
Obstgartenheizer.	
Aquecedores de Pomar.	
Аппараты для утепления садов.	
<b>SOIL INJECTORS</b>	Geo. Monro Ltd.
Appareils pour l'injection du sol.	Newton Chambers & Co. Ltd.
Inyectores de Terrenos.	Pan Britannica Industries Ltd.
Bodenimprägnierer.	Plant Protection Ltd.
Injectores de Terreios.	G. H. Richards Ltd.
Грунтовые инжекторы.	

## Section II.—DIRECTORY OF PRODUCTS AND SERVICES

<i>Products</i>	<i>Manufacturers</i>
<b>VAPORISING LAMPS FOR NAPHTHALENE, NICOTINE OR SULPHUR</b>	W. J. Craven & Co. Ltd.
Lampes à vaporiser la Naphtaline, la Nicotine ou le Soufre.	Geo. Monro Ltd.
Lámparas vaporizantes para Naftalina, Nicotina o Azufre.	G. H. Richards Ltd.
Verdampfungslampen für Naphtalin, Nikotin oder Schwefel.	
Lampadas vaporizantes para Naftalina, Nicotina ou Enxofre.	
Испаряющие лампы для нафталина, никотина или серы.	



SECTION III

PROPRIETARY  
and  
TRADE NAMES  
and  
MARKS








### PROPRIETARY AND TRADE NAMES AND MARKS.—Section III

<i>Name or Mark of Product</i>	<i>Description</i>	<i>Manufacturer</i>
ABOL	Garden insecticides	Plant Protection Ltd.
ABOLENE	Tar oil winter wash	Plant Protection Ltd.
ACME	Insecticides ; weedkillers ; applicators	Acme Chemical Co. Ltd.
ACTIN	Wetting compound	W. J. Craven & Co. Ltd.
AGRAL	Spreaders and emulsifiers	Plant Protection Ltd.
AGROCIDE	Benzene hexachloride insecticides	Plant Protection Ltd.
AGROSAN	Organo-mercury seed dressing	Plant Protection Ltd.
AGROXONE	Hormone selective weedkiller containing "Methoxone"	Plant Protection Ltd.
ALBOLEUM	} White oil or petroleum oil emulsions	Plant Protection Ltd.
ALBOLINEUM		
ALVESCO	Lead arsenate	Murphy Chemical Co. Ltd.
AMBERENE	Fungicidal wash	W. J. Craven & Co. Ltd.
AMDINOC	Ammonium salt of DNC	Sir T. & A. Wardle Ltd.
ARAKOL	White oil emulsion for glasshouse use	Shell Chemicals Ltd.
ARANIDE	Fungicidal white oil emulsion	Shell Chemicals Ltd.
ARASPOR	Fungicidal white oil emulsion	Shell Chemicals Ltd.
ARSINETTE	Lead arsenate	Plant Protection Ltd.
ATLACIDE	Weedkiller	Plant Protection Ltd. (by arrange- ment with Chipman Chemical Co. Ltd.).
B. WASH	Tar-petroleum oil wash	Geo. Monro Ltd.
B.83	Tar-petroleum oil wash	Geo. Monro Ltd.
B.92	Woolly aphid specific	Buggé's Insecticides Ltd.
BASCOPAR	Copper arsenate	Buggé's Insecticides Ltd.
BELUMNITE	Nicotine insecticidal wash	W. J. Craven & Co. Ltd.
	Insecticides, fungicides, etc.	Buggé's Insecticides Ltd.
BLITOX	Copper fungicide	Pest Control Ltd.
BOLTAC	Tree grease	Pan Britannica Industries Ltd.
BORDINETTE	Copper fungicide	Plant Protection Ltd.
BRITNICO	General trade mark	British Nicotine Co. Ltd.
BRITNICO	Nicotine products	Plant Protection Ltd. (by arrange- ment with British Nicotine Co. Ltd.).
BURRUN	Foot pumps for injecting cyanide dusts	Geo. Monro Ltd.
CALOTOX	Agricultural calomel	F. W. Berk & Co. Ltd.
CAPSINE	DNC petroleum oil winter wash	Plant Protection Ltd.
CAPSOMORT	Tar-petroleum winter wash	Murphy Chemical Co. Ltd.
	General trade mark	W. J. Craven & Co. Ltd.



### Section III.—PROPRIETARY AND TRADE NAMES AND MARKS

<i>Name or Mark of Product</i>	<i>Description</i>	<i>Manufacturer</i>
CARBO-CRAVEN	Tar oil winter wash	W. J. Craven & Co. Ltd.
CA-WE-CO	Apple weevil traps	W. J. Craven & Co. Ltd.
CHISINE	Hop insecticide	Plant Protection Ltd.
CHISWICK	Soft soap	Plant Protection Ltd.
<b>CLENSEL</b>	Insecticides, poison baits and root stimulants	John Paterson & Co. Ltd.
CLOUDITE	Nicotine dust	Plant Protection Ltd.
COPPACOL	Colloidal copper	Buggé's Insecticides Ltd.
COVERITE	Liquid wetter and spreader	Murphy Chemical Co. Ltd.
CRAVENITE	Soil fumigant	W. J. Craven & Co. Ltd.
CRESOFIN	Dinitro-ortho-cresol wash	W. J. Craven & Co. Ltd.
CUDINOC	Copper salt of DNC	Sir T. & A. Wardle Ltd.
CUPROKYL T	Copper fungicides	Hemingway & Co. Ltd.
CUPRYL	Copper dust	W. J. Craven & Co. Ltd.
CYANDIE	Cyanide fumigant for use under glass	Murphy Chemical Co. Ltd.
CYCLOSAN	Calomel dust	May & Baker Ltd.
CYDOL	Derris extract in white oil emulsion	Murphy Chemical Co. Ltd.
CYMAG	HCN rodent killer and glass- house fumigant	Plant Protection Ltd.
DACTINE	Derris preparation for wet spray- ing	W. J. Craven & Co. Ltd.
DACTINOL	Derris extract	W. J. Craven & Co. Ltd.
DeDeTane	DDT range of products	Murphy Chemical Co. Ltd.
DENOC	Selective weedkiller for weeds in corn and grass	Pest Control Ltd.
DENOCATE	Selective weedkiller for wild radish and poppy	Pest Control Ltd.
DENOCOL	Potato haulm killer	Pest Control Ltd.
DENOXONE	Selective weedkiller for thistle and buttercup	Pest Control Ltd.
DERASIFT	Derris dust	Pan Britannica Industries Ltd.
DERRIMAC	Nicotine-derris insecticidal powder	Plant Protection Ltd.
DERRISINE	} Liquid derris insecticide	Plant Protection Ltd.
DERRISOL		
DESTROMITE	Nicotine dust	Pan Britannica Industries Ltd.
DEXTRAK	Non-oil derris extract emulsion	Murphy Chemical Co. Ltd.
DINOCIDE	Dinitro-ortho-cresol paste	Sir T. & A. Wardle Ltd.
DITRENE	DDT preparations	Shell Chemicals Ltd.
DORMATROL	Petroleum washes	Pan Britannica Industries Ltd.
DRYMAC	Derris powder insecticide	Plant Protection Ltd.
DYNONE II	Acaricide for control of red spider	Pest Control Ltd.
DYNONE DUST H	Acaricide for control of red spider on hops and in orchards	Pest Control Ltd.


**PROPRIETARY AND TRADE NAMES AND MARKS.—Section III**

<i>Name or Mark of Product</i>	<i>Description</i>	<i>Manufacturer</i>
DYNONE DUST T	Acaricide for control of red spider in glasshouses	Pest Control Ltd.
DYTROL	High DNC content winter wash	Shell Chemicals Ltd.
ECLIPSE	Insecticides; fungicides, etc.	Buggé's Insecticides Ltd.
FD SPRAYS	Tetramethylthiuramdisulphide sprays	Pan Britannica Industries Ltd.
FILMITE	Orchard white oil emulsion	Murphy Chemical Co. Ltd.
FOLIOL	Summer petroleum oil emulsion	Shell Chemicals Ltd.
FORMASAN	Formaldehyde soil steriliser	Plant Protection Ltd.
FUNGEX	Liquid copper fungicide	Murphy Chemical Co. Ltd.
GARANTONE	Standard derris powder	Murphy Chemical Co. Ltd.
GASIT	Calcium cyanide	Buggé's Insecticides Ltd.
	Insecticides; fungicides and fumigants	G. H. Richards Ltd.
G.I.X.	Wetter; spreader; sticker; penetrant	Buggé's Insecticides Ltd.
GM BRAND	General trade mark	Geo. Monro Ltd.
GREENGLIDE	Floatable paris green	W. J. Craven & Co. Ltd.
GROFROGEN	Fumigant and root stimulant	W. J. Craven & Co. Ltd.
	General trade mark	Hemingway & Co. Ltd.
HIBERNOL	Tar oil winter washes	Pan Britannica Industries Ltd.
HORTOMONE	Root accelerator	Plant Protection Ltd.
HORTOSAN	Mercurial bulb and tuber dip	Plant Protection Ltd.
	General trade mark	Burt, Boulton & Haywood Ltd.
IMPERIAL	Soft soap	Plant Protection Ltd.
I.T.P.	Liquid derris preparation	International Toxin Products Ltd.
IZAL	Horticultural sprayer	Newton Chambers & Co. Ltd.
<b>IZAL</b>	Rubber tree tapping panel fungicide	Newton Chambers & Co. Ltd.
JEUNITE	Burgundy mixture	Murphy Chemical Co. Ltd.
KALCASAR	Arsenical for use with lime sulphur	Buggé's Insecticides Ltd.
KATAKILLA	Derris insecticide	Plant Protection Ltd.
KEROL	Soil steriliser	Plant Protection Ltd.
KETO	Economic tar oil emulsion	Buggé's Insecticides Ltd.



### Section III.—PROPRIETARY AND TRADE NAMES AND MARKS

<i>Name or Mark of Product</i>	<i>Description</i>	<i>Manufacturer</i>
KILLGERM	Tar oil winter washes	Killgerm Co. Ltd.
KILSECT	Derris washes and dusts	Pan Britannica Industries Ltd.
KURASPUD	Bordeaux fungicides	Pan Britannica Industries Ltd.
	Insecticides; fungicides, etc.	Buggé's Insecticides Ltd.
LEYTOSAN	Organo mercury seed disinfectant	F. W. Berk & Co. Ltd.
LIMSUL	Lime sulphur fungicide	Plant Protection Ltd.
LUNASAN	Organo-mercury seed disinfectant	Lunevale Products Ltd.
MAXIMAC	Nicotine insecticide powder	Plant Protection Ltd.
MERFUSAN	Mercurial turf fungicide and wormkiller	May & Baker Ltd.
METHOXONE	See Agroxone	
MIXOL	Tar-petroleum emulsion	Plant Protection Ltd.
MONRO	General mark	Geo. Monro Ltd.
	Insecticides and fungicides	Geo. Monro Ltd.
MORTEGG	Tar oil winter wash	Murphy Chemical Co. Ltd.
MORTO	Combined derris insecticide and wetter	Murphy Chemical Co. Ltd.
MORTOYLE	Petroleum winter wash	Murphy Chemical Co. Ltd.
MOULDOS	Rubber tree tapping panel fungicide	Newton Chambers & Co. Ltd.
MURCOTINE	Nicotine dusting powder	Murphy Chemical Co. Ltd.
MYCOL	Colloidal copper fungicide	W. J. Craven & Co. Ltd.
NATROCUPRYL	Copper fungicidal spray	W. J. Craven & Co. Ltd.
NICODUS	Nicotine dust	Geo. Monro Ltd.
NICOTUBES	Nicotine fumigators	Pan Britannica Industries Ltd.
NIKO	Nicotine preparations	Buggé's Insecticides Ltd.
NOMERSAN	Non-mercurial seed dressing	Plant Protection Ltd.
NORABITE	Rodent repellent	W. J. Craven & Co. Ltd.
NOVO	Phenolic soil steriliser	Murphy Chemical Co. Ltd.
ODEX	Derris-oil emulsion	Murphy Chemical Co. Ltd.
OLITE	Dusting sulphur	W. J. Craven & Co. Ltd.
OSTICO	Tree banding material	Plant Protection Ltd.
OVAMORT	DNC winter wash	Murphy Chemical Co. Ltd.
OVERNITE	Metaldehyde slug destroyer	Murphy Chemical Co. Ltd.
OVICIDE	Tar oil winter wash	Plant Protection Ltd.
P10/WO	Horticultural atomist insecticide	Buggé's Insecticides Ltd.
PARACARBO	Tar-petroleum winter wash	W. J. Craven & Co. Ltd.
P.C.	Insecticides and fungicides	Pest Control Ltd.
PERELAN	Potato fungicide dust	Plant Protection Ltd.
PERENIC	Copper-nicotine dust	Plant Protection Ltd.
PERENOX	Copper fungicide	Plant Protection Ltd.

**PROPRIETARY AND TRADE NAMES AND MARKS.—Section III**

<i>Name or Mark of Product</i>	<i>Description</i>	<i>Manufacturer</i>
PHENOXYL	Selective weedkiller for charlock	Pest Control Ltd.
PHULSTOR	Wettable sulphur	Geo. Monro Ltd.
PHYOMONE	Pre-harvest fruit drop preventive	Plant Protection Ltd.
POLNIC	Nicotine-derris dust	Plant Protection Ltd.
POLVO	Derris spray	Plant Protection Ltd.
POLVOSOL	Liquid derris insecticide	Plant Protection Ltd.
POTASSINE	Water softener and spray adjuvant	Plant Protection Ltd.
	General mark	Plant Protection Ltd.
PSYLORTOX II	DDT emulsion	Pest Control Ltd.
PSYLORTOX III	DDT suspension	Pest Control Ltd.
PYEFLY	Pyrethrum extract (6.5 % pyrethrum)	Stafford Allen & Sons Ltd.
PYMULSO	DDT emulsion (20 %)	Stafford Allen & Sons Ltd.
PYRACTONE	Activated pyrethrum extract	Stafford Allen & Sons Ltd.
PYRADOL	Pyrethrum insecticidal spray	W. J. Craven & Co. Ltd.
Q.10	Flea-beetle dust containing ben- zene hexachloride	Pest Control Ltd.
R.210	Pyrethrum extract miscible with water or oil	Stafford Allen & Sons Ltd.
REDOMITE	Glasshouse white oil emulsion	Murphy Chemical Co. Ltd.
ROTANE	Liquid derris extract	Shell Chemicals Ltd.
ROTENEX	Oleo resin derris (25 % rotenone)	Stafford Allen & Sons Ltd.
ROTINENE	Wettable rotenone powders	Bugge's Insecticides Ltd.
ROTINITE	Rotenone dusts	Bugge's Insecticides Ltd.
ROTOMORT	Derris dusting powder	Murphy Chemical Co. Ltd.
SAMPO	Insecticide and fungicide	W. J. Craven & Co. Ltd.
SERADIX	Synthetic root forming hormone preparation	May & Baker Ltd.
SESTO	Carbon bisulphide emulsion for soil fumigation	Plant Protection Ltd.
SHELLESTOL	Sulphated alcohol liquid wetter	Shell Chemicals Ltd.
SHELLESTONE	Fruit drop control hormone	Shell Chemicals Ltd.
SHIRLAN	Salicylanilide fungicide	Plant Protection Ltd.
SODEXANT	Sodium ethyl xanthate	Sir T. & A. Wardle Ltd.
SODINOC	Sodium salt of DNC	Sir T. & A. Wardle Ltd.
SPERSUL	Dispersible sulphur	Plant Protection Ltd.
SPIMO	Hop insecticide	Plant Protection Ltd.
SPINIC	Hop insecticide	Plant Protection Ltd.
SPRAYMAC	Tar oil emulsion	Plant Protection Ltd.
SPREADITE	Powder wetter and spreader	Murphy Chemical Co. Ltd.
STARKEY	Duster for dusting plant rows	Geo. Monro Ltd.
STERIFORM	Stabilised formaldehyde	Pan Britannica Industries Ltd.

### Section III.—PROPRIETARY AND TRADE NAMES AND MARKS

<i>Name or Mark of Product</i>	<i>Description</i>	<i>Manufacturer</i>
STERISOL	Tar acid soil steriliser	Pan Britannica Industries Ltd.
 <b>STER-IZAL</b>	Fluid and powder chemical soil steriliser and soil injector	Newton Chambers & Co. Ltd.
STEROLE STEROLENE STICTITE SULFADU SULFINETTE SULMAC SULPHOCLOUD SULPHOMITE SUMMIT SUPERMAC TACTITE TAKCO	} Soil insecticides and sterilisers Tree banding compounds Dusting sulphur Lime sulphur fungicide Nicotine-sulphur dust Nicotine-sulphur dust Nicotine-sulphur dusts Lead arsenate Nicotine-derris-sulphur powder Tree banding compounds Tree banding compounds for tropical climates	Buggé's Insecticides Ltd. Plant Protection Ltd. Murphy Chemical Co. Ltd. Plant Protection Ltd. Plant Protection Ltd. Plant Protection Ltd. Pan Britannica Industries Ltd. W. J. Craven & Co. Ltd. Plant Protection Ltd. Plant Protection Ltd. W. J. Craven & Co. Ltd.
TAKITAK	Tree banding compound	W. J. Craven & Co. Ltd.
TEEPOLEUM "M"	Miscible petroleum oil winter wash	Shell Chemicals Ltd.
TEEPOLEUM "S.E."	Petroleum oil winter wash mayonnaise	Shell Chemicals Ltd.
THIOL	Thiocyanate winter wash	Murphy Chemical Co. Ltd.
TOBACCEX	Nicotine insecticides	International Toxin Products Ltd.
TULISAN	Tetramethyl thiuramdisulphide fungicide	Plant Protection Ltd.
UNIVERSAL	Standard DNC/petroleum winter wash	Shell Chemicals Ltd.
VELVAS	Lawn sand	Pan Britannica Industries Ltd.
VENTURICIDE	Organo-mercury fungicides	Lunevale Products Ltd.
VERDASAN	Mercurial turf fungicide	Plant Protection Ltd.
WASPEND	Derris powder	Plant Protection Ltd.
WEE BEE	Derris insecticidal dust	W. J. Craven & Co. Ltd.
WEEDICIDE	Arsenical weedkiller	Plant Protection Ltd.
 <b>WHIZ</b>	Orchard sprays and fungicides	John Paterson Ltd.
WINTROIL	Petroleum oil emulsion	Plant Protection Ltd.
W.X.	Tar oil winter wash	Geo. Monro Ltd.
XL ALL	Insecticides; fungicides; fumigants	G. H. Richards Ltd.

ADVERTISEMENT  
SECTION





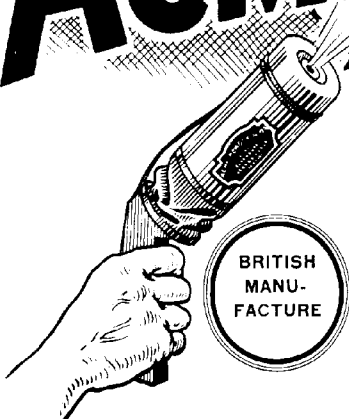
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Mixes readily with water

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**PETROLEUM OIL WINTER WASHES**

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and containing D.N.O.C.

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MINOR" Hand Driven Duster for Fruit Trees, Bushes  
and Ground Crops

"HYDRALUX" 2 and 3-ram Power High Pressure  
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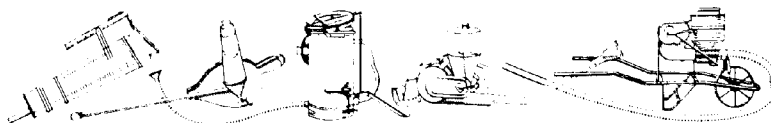
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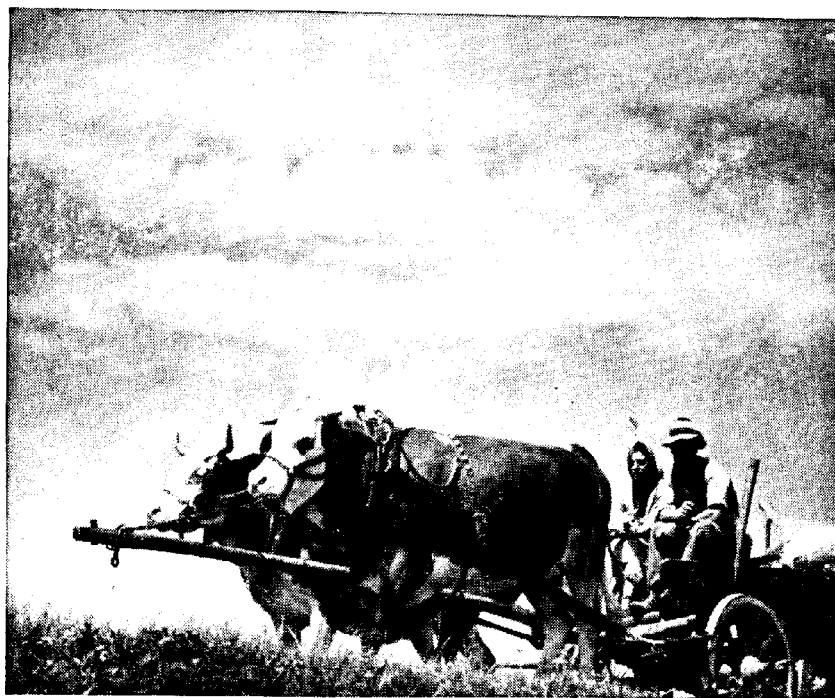
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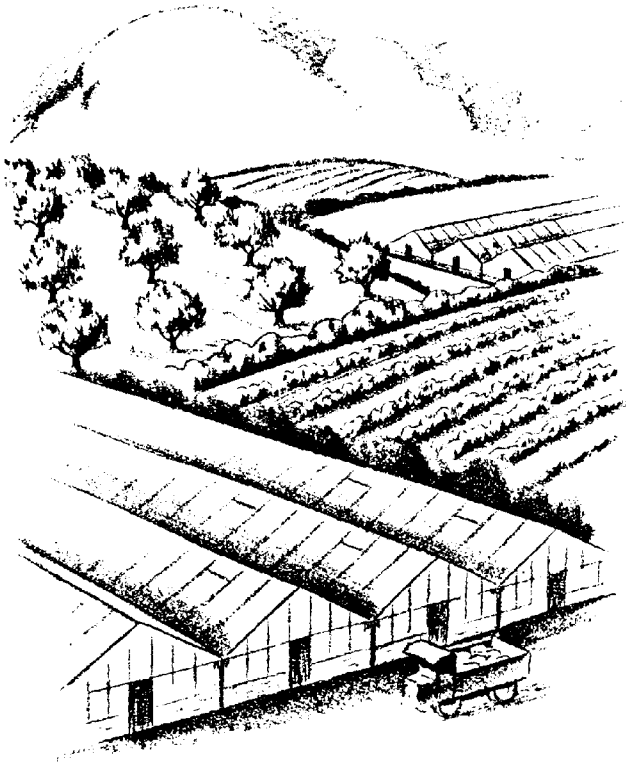
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**FOR TEA AND COFFEE ESTATES**

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# DYNONE

Registered Trade Mark Brit. Pat. Nos. 184291, 321211,  
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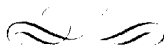
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